



Winter Gill Net Season Set

The Columbia River Fisheries Compact established a 30 percent commercial and 70 percent recreational allocation for catches of the 1988 Winter salmon. This is the T-bone of all eating salmon for the year and the public is assured they will be able to go to the market and buy what they want. If certain sports groups had their way only they would be allowed this prize fish. One of the largest returns on record, 97,900 fish is predicted.

Randy Fisher, Oregon Fish and Wildlife Department Director, and Joseph R. Blum, Washington Fisheries Department Director, approved a joint fishery staff recommendation for the 13-day season with weekend closures in the lower Columbia from the mouth to Kelley Point.

The gill-nets will fish Feb. 16-19, Feb. 21-26 and Feb. 28-March 4 with noon openings and 6 p.m. closings during the three periods.

An eight-day, 12-hour winter fill-net sturgeon fishery, Feb. 16-19 and Feb. 21-26, was approved in zones 4 and 5 between Kelley Point at the Willamette River mouth and the below-Bonneville commercial deadline. Indian Treaty fishermen got a Feb. 1-March 6 sturgeon season.

Almost 75 percent of the salmon entering the Columbia in February and early March are of Willamette River origin and they are predominantly the large 5-year-old salmon averaging more than 20 pounds in weight. The smaller 4-year-old salmon reach peak abundance in April.

The in-season hearing at 1 p.m. March 3 in the Portland headquarters of the Oregon Fish and Wildlife Department would examine the salmon landings and whether the gill-net season should be extended to March 5 or 6 in order to reach the commercial allocation.

The commercial catch allocation has been 24 percent for the Willamette run, according to Fisher, but the Willamette Basin Fish Management Plan recently adopted by the Oregon Fish and Wildlife Commission, it goes to 30 percent when the run projection is for more than 90,000 spring salmon.

Now they want the Sturgeon too!

On the 10th day of January 1988 in Corvallis, Oregon, Forrest Meuret submitted resolution #3 to the Oregon Wildlife Federation to "Make Sturgeon and Spring Chinook Game Fish". It says "The Federation should participate in the formulation and fine tuning of an initiative petition to designate the recreational fishery as the highest and best use, and priority use, of the Fishery resource. To prevent gillnetting of sturgeon and spring chinook and to provide a selective means of harvesting any resulting surplus."

In the face of all the facts that were presented to the legislature last April 1987, you would think a guy like this would give up, but no, he has only one thing on his mind and that is to stop all gillnetting on the Columbia River. He doesn't know that there are seafood restaurants, fish markets, grocery stores, and the general public that like to have fish on their table. He thinks all fish in the Columbia River should be his to play with. Mr. Meuret has been asked for years to go fishing. How about the

working man? Besides some sport fishermen, the only people who want the gillnetters off the river are the politicians and millionaire sport store operators like Larry Schoenborn, who stand to gain something for themselves.

Last year's sports catch reached an all time high on sturgeon. The sports caught 61,000 sturgeon and the gillnetter only 11,000 for the public consumption. Willamette Falls had a count of 54,832 winter salmon in '87, the fourth highest fish run in history. This count was fish that escaped by the sport fishery. The total run entering the Willamette river was 83,400. The sport catch of this run was only 18,800 fish, so you see no matter how many fish in the Willamette run, the sports can only catch a certain percentage. The gillnetters only harvested 8,600 winter salmon for the general public. The fall salmon run in 1987 was the largest in 40 years. In one day alone at Bonneville fish ladders, 40,000 fish went over the dam - does this sound like the fish runs are getting smaller?

Groups push for BPA commitment to fishery

Fishing interests Monday Feb. 1, 1988 asked the public to support full disclosure of efforts to restore Columbia Basin fish and wildlife populations damaged by hydroelectric power.

"We want the people of the region to know that higher rates have nothing to do with the fish and wildlife program of the Northwest Power Planning Council," said S. Timothy Wapato, chairman of the Columbia Basin Fish and Wildlife Organization, which represents fish and wildlife agencies and fishing organizations.

"The reason for increasing rates," Wapato said, is that the cost of Washington Public Power Supply System nuclear plants "has been rolled into the rate base." Wapato, also executive director of the Columbia River Inter-Tribal Fish Commission, challenged Bonneville Power Administration Jim Jura for saying at a Jan. 19 forum that the BPA might have to choose between lower power rates and programs that aid fish and energy conservation.

The power planning council program to restore fish and wildlife lost to the development of hydroelectric dams costs BPA about \$30 million annually, or only 1 percent of all BPA costs, Wapato said. "If your average utility bill is \$50 a month, you're paying 50 cents for fish and wildlife. That's hardly a budget buster," he said at a news conference. "Without a strong commitment from BPA, the fish and wildlife program won't be able to make up for the losses caused by the hydroelectric system," said Randy Fisher, authority vice chairman and Oregon Department of Fish and Wildlife director. "The program is not one of BPA's discretionary expenses. It was mandated by Congress as part of the Northwest Power Act of 1980," Fisher said.

More than 140 million fish have been lost since the first dams were built, Fisher continued, and the annual effect is 5 million to 11 million fewer adult salmon, steelhead and other fish.



Around 1920 Stern Wheeler T. J. Potter transferring passengers at Megler Washington Dock. (Across river from Astoria where Astoria Bridge reaches land near P. Ellis) Narrow gauge railroad ran to Chinook, Wash, Ilwaco, Wash, and ended up on Long Beach Peninsula. Many tourists took this route to vacation there and dig clams and enjoy. Your editor rode on this train.

Fishermen — Attention

If you catch a tagged sturgeon, we could use the following information.

- 1. Tag number(s) or tag(s) if it's a keeper. We'd prefer just the numbers from subtags or over-size so the fish could be released with its tags on, but we know that's not always possible when you're knee-deep in fish.
2. Date caught.
3. Where caught.
4. Length, if possible.

We have no reward system as yet, but we do send a tag history of the fish. We sure appreciate your cooperation with us regarding tag recoveries. Each bit of information we get puts us one step closer to understanding the life history of these wonderful fish. Thanks again.

Gayle Kreitman
Fish Biologist

EXPO DEBATE

Salmon For All President, Greg Neltzel, participated on the gillnet vs. recreational panel at the Seattle Fish Expo on October 30, 1987. Also participating were Tony West of the Pacific Coast Fishermen's Association and Kenneth Kukuda, a Southern California sports fishing advocate. The "panel" was mostly a confrontation between Mr. Kukuda and California gillnetters and very typical of user group fights occurring nationwide. The sports advocate, with everything to gain and nothing to lose by encroaching on the commercial fishermen, ranted on about the need to curtail gillnetters without any solid facts to back his position. The gillnetters, with their livelihoods at stake, exchanged heated dialogue with Kukuda. The result was to provide Kukuda with publicity and educate him at the same time with no chance at all of changing his mind. This was typical of some of our enemies encountered last spring in our legislative battles.

PACIFIC FISHERIES LEGISLATIVE TASK FORCE

Far better it is to exchange meaningful dialogue with those groups and politicians that seek an understanding of the facts. Such an opportunity was afforded to Salmon For All on October 31, 1987 in Charleston, Oregon before the Pacific Fisheries Legislative Task Force. Representing Salmon For All were Greg Neltzel, Jim Hogan, and Bob O'Bryan. Members of the Task Force included:

- Alaska: Senator Dick Ellason; Senator Fred Zharoff; Representative John Sund.
Oregon: Senator Bill Bradbury; Senator John Breenneman; Representative Paul Hanemann; Representative Tom Hanlon.
Idaho: Senator Ron Belleispacher; Senator John Hansen; Representative Steve Herndon; Representative James Lucas.

California: Assemblyman Gerald Felando; Assemblyman Dan Hauser.

Also present were Washington Representative Mary Margaret Haugen (who led our efforts against HB 223) and Task Force Consultant, Mary Morgan.

Greg opened the presentation with a brief history of Salmon For All. Bob followed with an excellent overview of the national struggle between sports and commercial fishermen (following).

"Ten years ago the commercial seafood industry was threatened by massive foreign nets off our coasts, taking what was rightfully due the U.S. public, in particular the American consumer. This was corrected by the 200 mile off shore limit for foreign vessels.

Now our threat, "enemy" if I may, is right on our shores. This threat is a small band of misinformed, emotional recreational fishermen. As we know, these are not idle threats. We need to know that this is not a struggle just in the Columbia River, but nation wide.

Some examples are the Gulf of Mexico where the sports/recreational fishermen have succeeded in making the "redfish" and "speckled" trout a sport fish only, and they're going after other species. California has just defeated an effort that would have made gillnetting illegal up to 75 miles off shore. In Florida the recreational fishermen want all of the sail-fish and the Blue and White Marlin. In the Great Lakes, as well as Puget Sound and even Alaska, the struggle is over salmon. The sports groups are now hard after the halibut in Oregon, Washington, and Alaska. These are but a few of the struggles facing the seafood industry.

This is a dangerous trend that has developed and must not be taken lightly.

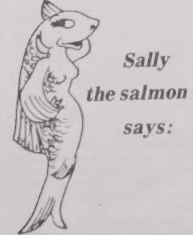
In the 1950's the recreational fishermen in Oregon said, "give us all the salmon in the coastal streams, except the Columbia River and we'll be happy." They got that.

In the mid 1970's the recreational fishermen said, "give us all the steelhead and we'll be happy." They got that, too.

In 1987 they again came and said, "Just give us all the sturgeon, salmon, and coho in the lower Columbia and we'll be happy."

We say hell no! We've realized

Continued on Page 4



I am a great natural resource which has been an important factor in the economy of the Northwest since the early 1800's. During this past century, I have produced values for this area in excess of billions of dollars and, in addition have provided extensive employment for the citizens of our communities along the Pacific Northwest Coast from the Columbia River to Alaska and have supplied the people of our nation with millions of pounds of nutritious protein food. Let's not get foolish at this stage and let greedy sports-fishermen and sports store operators take over this resource for themselves alone.





Official Publication of the

## COLUMBIA RIVER FISHERMEN'S PROTECTIVE UNION

One of the oldest Conservation Unions on the West Coast

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### Foreward

This paper is being published for the express purpose of keeping the public and the fishermen informed of the true facts and happenings in regard to the Columbia River Fishing Industry and all people connected with it. The advertisements which appear within make it financially possible to publish this paper and we hope you will in return patronize and thank the business people who contributed to this cause. Anyone who wishes to contribute articles, pictures, stories, or ads, please contact the editor or Fishermen's Union office at 322 10th Street, Astoria, Oregon 97103 or Phone 325-2702.

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A number of C.R.F.P.U. members are representatives on various agencies and advisory boards concerning fisheries issues. A brief directory follows. Members are encouraged to contact individuals regarding specific issues, or call the Union office.

UNION OFFICE - (503) 325-2702. Secretary Arlene Graham. Hours 9 a.m. to 1 p.m. Daily on weekdays.

LOWER RIVER SNAG FUND - Gillnetter - Don Riswick. (503) 325-2507; Phillip Johnson (503) 325-5546.

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### Snag Dues Notice

Clip out and mail in along with your \$50.00 (Tax Deductible) you will receive a receipt and sticker for your window on your boat.

Anyone fishing from Tongue Pt. to the bar should contribute. We here in the lower river try to keep the drifts clear of snags. We have two 110 fathom, 38 foot deep floater nets which are available for snagging to anyone who pays into the fund and wants to get a gang together to clear snags. Diver fees are \$200 for 6 hour shifts. They will be paid out of the fund, so lets all kick in and take part in clearing the drifts.

You all made money this fall and this fund should be a must for all of you. Don't let just a few of us shoulder all the responsibility and the rest of you become free loaders.

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## THE UNION NEEDS YOU - JOIN NOW

To all of you who will be taking part in the fishing season and that goes for Youngs River too, we need dues to keep this organization running and looking out for your fishing interests.

For quite a few years now a great number of you fishermen have slid by from year to year without paying Union Dues. You have had a bunch of lame duck excuses in one form or another. Some of you holler about price, some of you holler about some incident that happened 30 years ago when some other person was in the Union. All these excuses won't help you now. We are not dealing with the past, but with NOW... Why not join this season and help make our Union strong. Attend our meetings and give us your dues. We don't know what you think, or what policy you wish us to follow if you never come around. We can stand united or we can fall divided. Which way do you want it?

We encourage all part time fishermen also to take an active part in this Union. Because of the chopped up seasons and less fishing days and long periods in between, many fishermen have had to supplement their earnings with other jobs. Don't let that distract you from this Union. We need you as members. Join today and be heard.

Dues are \$150 per year and can be paid in installments.

## Attention Youngs River Fishermen

A snag fund has been set up to pay for snag pulling in Youngs River.

The fee is \$20 per boat. Fish Buyers will have a receipt book to take your money.

Over 50 sinkers were taken during a 3 day period below the Yacht Club bridge and many more remain to be pulled. Please sign up as soon as possible.

### WHY HAVE FISH AND WILDLIFE COMMISSIONERS

The state of Oregon has seven appointed commissioners to the Fish and Wildlife Department, but what are they good for? They no longer attend the Compact meetings, but delegate their authority to one person, the director Randy Fisher. The commissioners used to get an education from the people who know the facts, but now only read about it in the paper. Most commissioners haven't the foggiest idea what commercial fishing is all about, but would gain some knowledge if they would come to the meetings. Yet these are the people who tell us when and how to fish through one man.

People who are commissioners should be appointed for their knowledge of the subject, not for political reasons and take an active part in the decision making.

### Ballot Box Biology drives state into fish business . . .

The Gillnetter caught 8,600 winter Willamette salmon for the general public's consumption in 1987, while the Oregon Department of Fisheries sold 7,600 surplus winter salmon out of the hatcheries, fish that the Gillnetter should have been allowed to catch for the public.

The State should not be in the fish business. All this goes to show is how politics and Ballot Box Biology works and the general public suffers. When there are large runs of fish, they should be harvested, not curtailed.

### Sea Resources, Inc.

A Non-Profit Community Supported Voc. Ed. Program  
For More Fish and Better Fishermen

Sea Resources, Inc. was founded in 1968 by a group of people and industries concerned about our area young people and the fishing industry. It was incorporated as a tax exempt group, and took over a long unused hatchery site in Chinook first used in 1886 as the first salmon hatchery in Washington. Rearing ponds were reclaimed and building constructed to house egg incubation facilities, a class room, shops for wood working, welding, engine repair, boat building, and a vocal manager's residence. A one-day course in fish culture and fisheries subjects was organized with the Ocean Beach school district, who provide a teacher.

Sea Resources provides the hatchery manager, a fisheries college graduate who is their only paid employee. Sea Resources Inc., which has about 500 members, leases the facility to the school district for \$1/year. The school in turn pays the utility bills and maintains the teaching areas.

Currently we have 16 high school students in the vocational course. All of them are interested in the fisheries courses and shop work, and most of the trapping of returning fish, egg taking, incubation and pond rearing is done by them. We release fingerlings in the spring and now have about 2,000 fish in the ponds - almost all fall Chinook, some silvers and chum, and plant most in the Chinook river, but many in other small area streams. Our returns this year will be about 1,000 fish, and we get some eggs from Big Creek hatchery. Last fall, we got 20 fish back from Youngs Bay.

We welcome visitors and hope you can make it here. As Gene Leach, our President says, we're continually broke and welcome any donations.

John Rowell, Sec'y  
Sea Resources  
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### A FRIEND OF THE FISHERY RUSSELL BRISTOW

Aug. 1, 1906-Dec. 23, 1987

Russell was well known in Clatsop County, and many other counties. He worked hard to preserve our natural habitats, of the mighty Columbia River and the fishing industry.

Russell served as Executive Secretary of Columbia River Fishermen's Protective Union for many years and also as President and Board member. He was truly dedicated to saving our fish runs and wanted to cooperate with all the user groups. A true Salmon For All Member.

Mr. Bristow was a member of Wickiup Grange, The Trail's End Gem and Mineral Club and a past member of the Kiwanis. He was active in soil and water conservation and worked to maintain the tribal rights and customs of the Warm Spring Indian tribe.

We truly will miss our friend of many years.

### Across the Bar

We have also lost three long time fishermen.

Nick "Barney" Marincovich, Svenson; Kenny Backman, Clifton; Ed W. Stephens, Altona, WA.

Our heartfelt sympathies are to all of the families at this time.

### District No. 4 Annual Meeting

C.R.F.P.U. members met at Humps Restaurant in Clatskanie on Thursday, Dec. 10, 1987.

The main concern was whether or not Salmon For All should write a letter to the Sturgeon Task Force. This letter will contain ideas on how to manage the sturgeon resource better. Majority present voted in favor of the letter.

The other topic discussed was the importance of preserving drift rights. It was agreed that District No. 2 go on record as being opposed to attempts being made to disrupt this method of organized fishing.

New officers elected were John Kallunki, District No. 4 director, Greg Mustola and Jeff Lumi-Jarvi, alternative directors.

### Sport Fishermen Can't Sell Caviar

An article in the December-January issue of *National Wildlife* erroneously reported that California sport fishermen can legally sell caviar from sturgeon. In fact, it is illegal to buy or sell any part of a sturgeon taken under the authority of a sport fishing license in California.

"Sport fishermen may legally catch sturgeon and remove the eggs for personal use, but it is illegal to sell them," says DeWayne Johnston, Chief of the Wildlife Protection Branch of the California Department of Fish and Game.

### Secretary's Report

The Board of Directors of C.R.F.P.U. met with people from Oregon Department of Fish & Wildlife on January 11 in Clatskanie to have them bring us up to date on what kind of fishing seasons we are looking at for 1988. All runs look strong, except for the May run of spring salmon which will be down again. The winter run of spring salmon will be the second largest since 1953, around 100,000 fish. The staff will propose a season of 13-15 fishing days for us starting around the 16th of February, with weekends closed, running into the 4th, 5th, or 6th of March. They claim, with the large run returning, we should harvest around 18-19,000 fish. They do not propose a sturgeon season this winter, except in Zone's 4 & 5 above Kelley Point, which area is always closed to salmon fishing during the winter season.

January 28th, a meeting will be held in Vancouver, WA at 10:00 a.m. in the City Council Chambers, to set the winter season.

Looking at other seasons for the rest of the year, they are expecting a strong run of Blueback returning and that season will be set at the compact meeting on June 20th.

Shad season will be somewhat the same as last year, May 23 to June 17th. Outlook for the fall is a strong salmon run again and a better coho return than 1987.

I'd say our fishery on the Columbia has a bright future as long as we can keep some of those sport interests off our back. These large returning runs can do nothing but hurt their argument, providing they look at the facts.

The facts are, for years now both the Department of Fisheries, both from Oregon and Washington, have been doing their utmost to make the rivers and streams better for sports fishery. They have stocked streams to the point that they have fish returning year round and in some cases, even bringing the fish back down stream and dumping them to give them a second opportunity to catch a fish. Steelhead runs have been built up to record numbers and now sturgeon angler catches are on the increase every year. So really, it is hard to understand

why there is still some sport interests that think the only way to improve their catch is to do away with commercial fishing and forget about the millions of people across the country that have to go to the market to get their fish.

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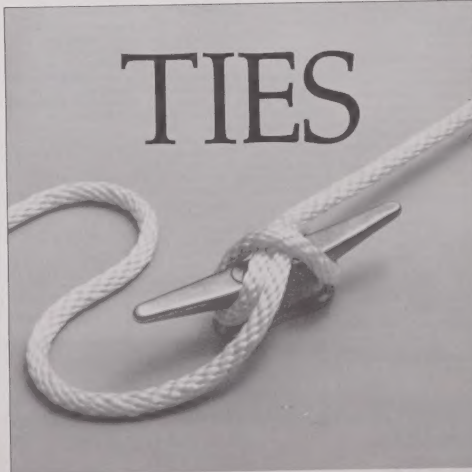


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## Salmon For All

Continued from Page 1

greedy people will never be happy. They only want more. What next? Our Troll Salmon Allocation? Cod fish, halibut, crab? Sooner far fetched? I bet the fishermen in the Gulf of Mexico thought that at one time.

We say NO to these greedy people, but we say YES to a continued thriving seafood industry. We say YES to an estimated 217 million seafood consumers in the U.S. We say YES to responsible fisheries management and increased enhancement efforts.

Remember, you're not just fishing for rights, you're fishing for the rights of the consumer. Commercial fishermen are "Fishing for America!"

Jim Hogan gave a brief explanation of the 1987 legislative history and emphasized the importance of informed legislators and asked that they regard Salmon For All as a factual information source of fishery issues. Concluding the presentation were selected segments from the lawsuit filed in Thurston County the day before, October 30, 1987, which alleges that decisions regarding the allocation of salmon in the Columbia River is done in secret at non-public meetings.

The state of Washington Department of Fisheries, when managing salmon runs either in Washington regulated or Columbia River concurrent waters, has operated and continues to operate, in a private fashion. Specifically, the director of Washington Department of Fisheries, or his deputy director or assistant directors have engaged in non-public policy discussions with tribal, Oregon and federal officials relating to management of Washington and Columbia River salmon within state regulated or Columbia River concurrent waters. These discussions have resulted in agreements which control decision making of the Columbia River Compact and the Director of Fisheries. These privately held discussions have resulted in the establishment of frameworks for in-season management of Columbia River and Washington state regulated salmon fisheries, including non-Indian commercial and recreational fisheries, without the opportunity for public participation or open decision-making. The result of the aforementioned private, non-public decision-making process is to relegate public meetings of the Columbia River Compact or public regulation hearings conducted by the Director of Fisheries to merely operating as ceremonial acceptance of decisions and policies reached in private, non-public meetings. Said public meetings are entirely a sham in that they give the appearance of state officials being willing to receive comment, testimony, and argument from members of the public affected by their action, while denying them that right in substance."

"The meetings which have occurred, and continue to occur,

between the Director of Fisheries, Oregon and federal and tribal officials deliberating, discussing, considering, resolving, and evaluating management of Columbia River or other Washington State salmon fisheries constitute "meetings" for the purposes of the Open Public Meetings Act. These meetings, held in private, and not open to the public have been and are being held, without the apparent advice or consent of legal counsel, in violation of the terms of the Open Public Meetings Act, Chapter 39.06 RCW.

"This complaint does not seek to deny in any way Indian fishermen their full allocation of salmon reserved by the tribes' treaties with the United States government, as interpreted by the federal courts. This proceeding does not contest the authority or jurisdiction of the U.S. District Courts of the Western District of Washington, U.S. VS. WASHINGTON, Or the Western District of Oregon, U.S. VS. OREGON, to the extent issues of Indian fishing rights are properly before the stated courts. The sole focus of this complaint is to declare the rights and responsibilities of the parties hereto as to proper conduct of decision making relating to management of salmon runs in Columbia River concurrent and Washington regulated waters under procedures and authority established by state law."

We emphasized that much of the anger and frustration between misinformed user groups is a result of being excluded from any meaningful role in the decision making system. Idaho Senators Bieltspacher and Hansen requested copies of the lawsuits. When we are successful everyone will benefit. Senator Bieltspacher further expressed an interest in arranging a meeting between Salmon For All and Idaho sports groups. This would be an extremely credible way to explain the Salmon For All story that we can and must work together. Copies of the lawsuits were also provided for Representatives. Haugen, Haneman and Hanlon. T-shirts and fact books were also provided to all members. Vital political introductions were made that may prove valuable in the future and was a good investment of time and money.

Oregon state Representative Tom Hanlon added these words:

"The Pacific Fisheries Legislative Task Force, was formed for the purpose of promoting a regional approach on fisheries issues which obviously go beyond state lines. We met in Charleston at the University of Oregon facilities on October 31st and November 1st. Oregon, Alaska, California and Idaho are members. Washington and British Columbia should be. The Task Force meets four times a year and was formed in 1985 as a result, in part, of legislators believing their views were not being clearly expressed through the fisheries agencies in the respective states. It has been active in

areas of legislation including for example, the areas of Tributaries (TBT). Also, during the last Oregon legislative session, the Task Force supported a resolution composed by Representative Haneman and myself supporting continued use of the salmon fishery resource by all traditional user groups including those harvesting by net on the Columbia River. That resolution was used in Salem last April and was welcomed by our governor as a four state show of support for all traditional fisheries including our commercial fisheries."

"During the Charleston meeting Salmon For All spoke to the Task Force for the first time. The Task Force reacted positively. A future agenda item of the Task Force that was discussed at Charleston was a proposal for amendments to the Marine Mammal Act that will allow more balance than there presently is. Our Task Force has the Chairman of the Pacific Marine Fisheries Commission and Assemblyman Felando of California. All of the sixteen Task Force members are experienced legislators who are well educated in fisheries issues. The next Task Force meeting will be in early 1988 and will be held in California (we alternate meeting places between the states). When we have the date and city of meeting it will be published in this newsletter. Salmon For All and the Pacific Fisheries Legislative Task Force have begun their relationship on a very positive note."

## Local News — District #5

Lotsa activity with the arrival of smelt — good prices, so gillnetters are trying to capture as many as possible before smelt enter Cowlitz and the vicious under-cutting of price takes place. Too bad the dippers couldn't get together so everyone could make money from the fresh market.

There is a renewed sense of optimism about gillnetting with much activity in the way of license being pursued, new boats being built, nets ordered and older boats fixed up.

Westport Drift spent five days in late November and early December, removing pulp log sinkers that Wauana mill lost out of their lografts.

Mark Laukkainen

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## What is the continental shelf?

The edge of the continental shelf, where the bottom begins to slope steeply, most commonly is found at depths between 360 and 480 feet.

At the time the shelf received its name, it was thought to be essentially flat; now geologists know that the continental shelf has basins, ridges, and deep canyons. Compared to the deeper ocean floor, however, the relief is gentle; hills and basins on the shelf usually do not exceed 60 feet.

The continental shelf width varies from practically nothing to several hundred

miles. The shelf along the east coast of the United States is many times wider than that along the west coast. If all the continental shelves of the world are included, the average width is approximately 40 miles.

The shelf slopes gently, at an average drop of 12 feet per mile, from the shore to the continental slope. In contrast, the grade of continental slopes is 100 to 500 feet per mile. About 7 percent of the ocean is underlain by continental shelves. These are the areas where intensive mineral exploration is now being conducted.



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### United Kingdom's system kills incentive to sue

Sunderland Marine Mutual Insurance, the major insurer of fishing vessels in the United Kingdom (U.K.), has expressed interest in extending its 30-year-old program of personal accident coverage, or disability insurance, to U.S. fishermen. So reports Dennis Nixon, the U.S. insurance specialist who drafted the report for the National Council of Fishing Vessel Safety and Insurance. Nixon says that Ocean Marine Underwriters, a Warwick, R.I., firm, and a West Coast Marine broker appear to be interested in making Sunderland's program available to U.S. fishermen.

How does the U.K. program work? The vessel owner buys personal accident insurance for his whole crew, skipper included. The policies do not bear the names of individual crewmen; thus, if there is a change in crew, all the men remain covered. Some vessel owners "charge out the costs to crewmen; others bear the costs themselves," explains Tom Watson of Sunderland Marine. The annual cost of a policy amounts to a week's wages.

The policy provides 24-hour coverage to a crewman, Watson notes, "whether the insured is at work or not. It would, for example, cover the insured in the event of a car accident and also when on holiday." Apart from immediately compensating an injured fisherman with what would amount to lost wages, the U.K. policy covers up to 15% of medical expenses. The remainder of those expenses are picked up by the government, since the United Kingdom has a national health insurance program.

Despite the personal accident policy, the United Kingdom does not bar an injured fisherman from suing a vessel owner. "But why should he?" says Watson. "There is no incentive to sue; also, the court awards for industrial injuries are much lower in the United Kingdom than they are in the United States."

Susan Pollack

### Did You Know? . . .

- Columbia River Fishermen's Protective Union is the oldest organized group of fishermen. It was organized in 1884 and is still going strong.
- Bonneville Dam was completed in 1938 and Grand Coulee in 1941.
- In 1965 Soviet trawler appeared off the Oregon Coast. Action by fishermen succeeded in obtaining a 12 mile fisheries zone.
- By 1974 there were Soviet, Japanese, North Korean, East German, and Polish trawler fishing in that zone. 100 years after the innovation of canned salmon, a new invasion had taken place in Pacific Coast Fisheries.
- In 1978 the Fishery Management and Conservation act of 1976 extended the fishery conservation zone from 12 to 200 miles.
- C.R.F.U. office has two marvelous, inexpensive cookbooks for sale. "Strictly Fish" by The Northwest Fishermen's Wives Association and "Seafood Symphony" by Pacific Coast Fishermen's Wives. A nice gift for someone special. . .



### Status of the 1988 Willamette Spring Chinook Run

Different known data concerning the returning age classes of spring chinook from the previous year was used to predict the number of spring chinook entering the Columbia River, destined for the Willamette River during 1988. Separate predictions were developed for age 4, age 5, and age 3 and 6 fish. The validity of the technique used comes from the accuracy experiences in past years.

#### METHODS

The method used in predicting the age 3 and 6 fish, since the numbers are so small, is simply to look at the average return over the past 10 years. For these two age classes this method is very accurate. In predicting the age 4 and age 5 fish several groups of data are analyzed. For the age 4 fish, the principal data used are the average returns of 4's for recent years, the appropriate brood smolt releases, and the appropriate return of jacks and mini-jacks. For the age 5 fish, the principal data used are the number and mean length of returning 4's from the previous year as well as the average returns of 5's from recent years.

#### RESULTS

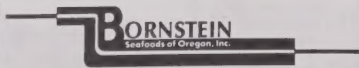
The prediction of the number of Willamette spring chinook entering the Columbia River in 1988 are as follows:

Estimated number of age 5 fish equals . . . . .	45,000
Estimated number of age 4 fish equals . . . . .	50,000
Estimated number of age 3 and 6 fish equals . . . . .	2,000
Estimated total run size equals . . . . .	97,000

Willamette spring chinook return primarily as 4-year-old and 5-year-old fish; therefore, regression analysis was used as an additional method of predicting returns for each age class. Returns of age 4 fish were predicted with a two-variable regression model and the ratio of age 4 to age 5 fish were predicted with a one-variable regression model. A regression model that would directly predict the returns of age 5 fish could not be developed. The data set used for age 4 fish consisted of returns of age 3 jacks and age 2 mini-jacks, smolt release data, and river flow; while the data set used for age 5 fish consisted of returns of age 4 adults, age 3 jacks, and age 2 mini-jacks; smolt release data; river flow; and the size at return of age 4 adults. The regression analysis used to predict run sizes is contained in a more detailed summary (Frazier 1987). A similar report for 1988 run size projections will be published in February 1988.

Table 1. Run Projections of  
Willamette Spring Chinook  
Entering the Columbia River, 1983-87.

Predicted Return to Columbia River	Actual Return to Columbia River	Actual Return to Willamette River
1987		
35,000 5's	34,100 5's	25,300 5's
41,000 4's	57,900 4's	56,200 4's
2,000 3's & 6's	2,100 3's & 6's	1,900 3's & 6's
78,000	94,100	83,400
1986		
30,000 5's	23,500 5's	16,700 5's
33,000 4's	46,100 4's	42,500 4's
2,000 3's & 6's	3,400 3's & 6's	3,200 3's & 6's
65,000	73,000	62,400
1985		
35,000 5's	30,300 5's	21,000 5's
33,000 4's	35,600 4's	34,100 4's
2,000 3's & 6's	2,200 3's & 6's	2,000 3's & 6's
70,000	68,100	57,100
1984		
30,000 5's	38,600 5's	31,200 5's
33,000 4's	43,600 4's	41,700 4's
2,000 3's & 6's	2,000 3's & 6's	1,600 3's & 6's
65,000	84,200	74,500
1983		
30,000 5's	25,500 5's	19,950 5's
40,000 4's	35,500 4's	34,100 4's
2,000 3's & 6's	2,200 3's & 6's	2,050 3's & 6's
72,000	63,200	56,100



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## Industry must boost lobbying effort to counteract sport-fishing pressure

To the Editor:

The future role of the U.S. government in fisheries management and development is currently being determined. Noticeably absent from the policy discussion and formulation is the U.S. seafood industry. On the other hand, recreational fishing interests are working closely with federal departments with fisheries responsibilities. Congress, at the same time, is focusing attention on food inspection and trade issues, which could revive discussions of shifting fisheries to the export-minded Department of Agriculture, the agency also responsible for the mandatory meat and poultry inspection programs.

Although inspection and trade raise the issue of what department should have jurisdiction over U.S. fishery resources and utilization, there have been strong undercurrents surrounding the issue for many years. The activities of the National Marine Fisheries Service (NMFS), which currently oversees marine fisheries, now include conducting scientific research to determine harvest levels, allocating resources among user groups and to a modest extent, offering fisheries development, marketing, and trade assistance. The National Oceanic and Atmospheric Administration (NOAA) within the Department of Commerce houses NMFS and has since 1970. Prior to that, the Bureau of Commercial Fisheries in the Interior Department managed fisheries, and some fisheries programs were originally under the direction of the Department of Agriculture.

Currently, sport-fishing organizations are working to establish a National Recreational Fisheries Policy within the Interior Department. At the same time, these recreational groups are engaged

in discussions with Commerce officials to further increase the influence of recreational interests in that agency's policy making. Recreational fishing organizations are seeking an advocacy agency to promote the sport-fishing agenda. One of the items on the agenda is to limit commercial fishing access to certain areas or species and to restrict types of fishing gear. In June 1987, the National Fisheries Institute (NFI) completed an evaluation of resource-access conflicts that more fully explains the issue.

Among the findings of that study was an indication that user-group conflicts between commercial and sport fishermen are occurring in virtually every region of the country. Based on surveys of industry members, most commercial members were concerned that there has been an inadequate response to political activities undertaken by sport-fishing organizations. Politics have been injected to the detriment of commercial fisheries in conflicts ranging from Gulf redfish to Great Lakes perch to Oregon salmon. These disputes are representative of so many other conflicts that involve local groups or national organizations, or both.

Until now, it has been difficult to see user-group conflicts as a national issue. That is changing, however. The concerted efforts of sport fishermen to redefine federal policy to enhance and promote recreational activity at the expense of U.S. seafood consumers and the commercial industry snap the issue into focus.

A look at the Sport Fishing Institute's (SFI) May 1987, newsletter article, "Parity?," offers insight into their doctrine. They say that non-discriminatory treatment of recreational and commercial fisheries means parity. Parity, though identified as a

"priority" issue, is not the end of the line. With regard to certain fisheries, game-fish status should be conferred. That is, exclusive access should be reserved for one segment of the populace. It is ironic that SFI defines parity as "non-discriminatory treatment of recreational and commercial fisheries" as the stepping stone to achieving an allocation system that is discriminatory.

Marine sport fishermen are participating in the development of a National Recreational Fisheries Policy with the Interior's U.S. Fish and Wildlife Service. Interior has prepared a draft outline with the help of a steering committee that includes major recreational fishing representatives. The draft identifies three needs for designing a National Recreational Fisheries Policy: a need to reduce fragmentation in policy development; a need to advance the precepts of recreational fisheries; and a need to recognize important socioeconomic aspects of recreational fisheries.

It is not coincidental that development of a National Recreational Fisheries Policy includes provisions relating to marine fisheries as well. This may signal a preference by sport-fishing organizations to shift jurisdiction from Commerce to Interior. If so, marine recreational interests are hedging their bets.

Sport-fishing groups are attempting to negotiate a better deal from Commerce. At a June 1987 meeting of NMFS officials and recreational fisheries interests, sport fishermen demanded more federal grants, more representation on fishery management councils, a bigger share of the NMFS budget for sport-fishing programs and a larger allocation of fishery resources. Sport-fishing groups insist on new development initiatives to serve their interests but argue against continuing NMFS programs that encourage efficiency in commercial harvests.

The rhetoric of the sport fishermen is familiar. NMFS is accused of mismanaging fisheries and employing unsound conservation methods to achieve some undetermined benefit for seafood producers.

Recreational fishermen use "conservation" as a way to exclude commercial fishermen from certain fisheries or to ban particular types of fishing gear. Now the term "parity" can be understood to mean control over the actions of a federal agency.

The most ludicrous demand of all is for more sport-fishing appointments to the regional fishery management councils. These councils, comprised of private citizens, develop management plans for the nation's fisheries. Virtually every plan in effect regulates predominantly commercial fisheries. On several key councils, however, commercial representation is grossly inadequate.

For example, although Florida is among the top five producers in value of seafood landings, not one Florida commercial fisherman holds a seat on either the South Atlantic or Gulf of Mexico councils. Florida holds three seats on each council. Commercial fishing fares poorly in the South east as a whole. Only the shrimp and menhaden fisheries enjoy any representation.

The seafood industry is not yet playing an active role in the ongoing debate about the functions, role and future of federal fishery resources. That must change.

Members of Congress will determine the direction of federal policy. The seafood industry must understand the risks of allowing sport-fishing groups to continue unchallenged in lobbying for changes that reduce the viability of commercial fisheries to meet market demands.

The commercial industry must focus on this issue now.

Lee Weddig  
Executive Vice President  
National Fisheries Institute  
Washington, D.C.

## District 2 & 3 Annual Meeting

Meeting on November 18, 1987, was called to order at 7:00 by Jim St. Peter. Greg Neitzel gave a very informative update on Salmon For All.

Jim Hogan reported on Pacific Fisheries Legislative Task Force meeting in Charleston, Oregon on Oct. 31. TBT - Marine Debris - Offshore Mining - Columbia Basin Authority and more. Jim also reported the semi-final sturgeon catch at 60,000 sport and 1,500 commercial and 80% of the sport catch was in the 3 to 4 ft. range.

Greg Neitzel also reported on the Marine Mammal Act. It is coming up for review. Proposed changes are to change the word "protect" to manage and strike the word "NONLEATHAL." These changes would allow the various states to regulate the marine mammals.

Educational video's were also discussed. We thought it would be a good idea to make a video of gillnetting from the 1800's to the present time showing positive aspects of commercial fishing and how the gillnetters have fought to stop pollution and build hatcheries to rebuild the salmon runs.

Discussion was held on the need to hire a full time Salmon For All manager. Jim St. Peter was elected district representative.

Bruce Crookshanks was nominated for President and Jack Marinovich for Executive Secretary.

Meeting was adjourned at 9:25 p.m.

—Bruce Crookshanks

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Pilot Boat "Joseph Pulitzer" moored near west end of Sanborn Docks - Astoria, Oregon Around 1910.  
Notice linen in net racked lower right hand corner.

### What is surimi, anyway?

Surimi is a white, odorless, virtually tasteless but highly nutritious paste made from fish that has been intricately minced and washed according to a 500-year-old process. It isn't an end product, but a raw material used by food engineers the way a baker uses flour.

Today, with the age-old art mated to modern refrigeration, surimi has proven to be the most malleable form of protein around. Food technologists envision a seemingly infinite range of potential uses. It has long played a big part in the Japanese diet, and American consumers are demonstrating a willingness to experiment with surimi-based foods that have appropriate blends of taste, texture and appearance.

The 15th century Japanese used a process called kamaboko to create a fish jelly or dough that could be wrapped around a bamboo stick and cooked. The result was a hollow tube that could be sliced into doughnuts called chikuwa, or bamboo circles. Today, Japanese seafood processors transform fish into an intermediate product called surimi, which still serves as the raw material for the manufacture of Kamaboko and chikuwa, along with hundreds of other foods.

The ancients didn't know why, but the process kept fish from spoiling. Today's food technologists understand that the washing is a critical part of the process because it removes soluble fats, oils, minerals and inorganic salts that would otherwise promote deterioration. The mincing, washing and straining create a product with the consistency of Cream of Wheat that is about 75% water and 16% protein. It contains .02% fat, no carbohydrates and no cholesterol. A 100-gram portion has 80 calories, compared to 350 for a similar portion of beef, or 107 for 100 grams of skinless chicken breast. It has a low-density lipids that are probably good for your heart.

It is, in short, an ideal product for today's health-conscious consumer.

Come now, you counter. Who is going to eat fish mush, even if it is nutritious?

The food technologists have the answer to that, and some of the biggest food companies in the country are currently at work in the lab, investigating new products. Surimi has binding, texture and flavor characteristics that make it more versatile than any other vegetable proteins and enable it to compete with beef, pork, poultry, seafood, grain, vegetables and dairy products.

Are you in the mood for cheese, ham, mushrooms? How about lobster, shrimp or crab? Surimi will do it all. Here we have surimi

extruded like spaghetti noodles. Not your style? Then how about bread or bacon, burgers or sausages? How about soups, sauces, fortified dairy products, nutritious snacks, pet foods, protein extenders for meat, vegetable and fruit concoctions, powdered surimi as a nutritional supercharger in baby food, diet supplements or vitamins?

Nothing whets your appetite? Then how about surimi candy? The Japanese like it.

So, how do you make this miraculous stuff? Start with whole, gutted fish. Make sure it is a white-fleshed species, low in oil, that has been processed quickly and carefully with all the entrails removed. Feed it into a meat/bone separator to distinguish meat from skin and bone, wash it three to six times, dewater it in a screw press and strain it smooth.

Because you've washed it carefully, it has a high gel strength, or ash, which means it will fetch a high price. The washing has reduced the yield to a level that may seem unacceptable at first, but the reward is the ash that enhances its storability and provides the texture potential for innumerable end products.

Once the primary processing has been accomplished, surimi can either be sold directly to a converter or augmented with "antifreeze," cryoprotectants like sugar, salt and sorbitol, that will preserve the ash for up to a year in frozen storage. Then, it can be thawed and converted into secondary products that will have similarly long shelf lives.

It's a remarkable product. The Japanese maintain that its creation requires artistry. The brass Americans contend that they can accomplish the same result with technology, and they intend to try.

— J. Sabella



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## Then again, you might like them chased away

BY Grant Donaldson

Shark researchers at the University of Miami are convinced they have at last found a material that stops sharks dead in the water, soap.

But before you run out and load your boat with Tide or some other favorite detergent, you'd better wait until the scientists find out which soap works best, which may take up to five years.

During a two-week period in 1981 and for two weeks this summer, Dr. Samuel Gruber and his colleague, Eliahu Zlotkin, tested several types of industrial soaps (surfactants) on lemon sharks. In every test, the sharks were repelled, say the researchers.

The sharks typically writhed in agony, locked their jaws and became disoriented when sodium docecyl sulfate (SDS), an active ingredient in industrial soaps, was squirted in their faces.

"This (SDS) encourages us, because its effect is spectacular. I mean the shark has its mouth on the bait and the next instant is on the bottom," says Gruber.

The discovery that soap could be used as an effective shark repellent was an offshoot of research done in 1972 by Dr. Eugenie Clark, who found that the common Red Sea sole seemed to be immune from shark attack. This confirmed the long-held theory that there must be some species of fish with built-in protection from sharks.

Clark found that, when threatened, the sole ejected a milky substance into the water that repelled sharks. The substance, now called pardaxin, was found to have the strength of cobra venom. In large doses, it is capable of destroying the shark's sensory organs, causing death.

Since 1972, pardaxin has been studied in depth. "Everything they dumped the stuff on was wrecked, destroyed; the cell membranes exploded," says Gruber.

Unfortunately, pardaxin's chemical makeup—consisting of 162 amino acids—is too complicated to be reproduced synthetically in the laboratory, so it can never be a source of shark repellent for humans. But during the research, it was noted that some industrial surfactants have properties similar to those of pardaxin. Last year, Zlotkin suggested that he and Gruber test them on sharks. They were astounded at the results.

The surfactant they are currently using is 10 times more powerful a repellent than pardaxin.

"I'm absolutely convinced it will work. This stuff dissolves cell membranes. And no shark is going to want to get its cell membranes dissolved. Its sensor organs will tell it that something is wrong, and it will turn around and run," explains Gruber.

The apparent effectiveness of SDS is a breakthrough that has been a long time coming. Since the early 1940's, the U.S. Navy has spent hundreds of thousands of dollars trying to find an effective shark repellent to save the lives of downed pilots and shipwrecked seamen.

During World War II, fliers were issued packets of Shark Chaser, which was supposed to camouflage the victim in a cloud of dye that smelled like rotten shark meat.

Shark Chaser was issued based on the premise that sharks hate the smell of rotten shark meat. The dye worked fine in laboratory tests but failed in ocean trials. Sharks ignored the repellent, and sometimes they ate entire cakes of the stuff.

Over the years, scientists also have tried many different poisons as well as the tape-recorded sounds of killer whales to discourage sharks, but nothing has worked.

"This (surfactants) is the only thing to come along that we would even bother testing," says Gruber.

He reports he accidentally killed one of the lemon sharks when he exposed the fish to two doses of SDS in one day. The doses are only 4 cc in volume, about what a person receives when getting a shot.

Although he feels he is on the right track, Gruber estimates it will take another five years before the material becomes commercially available. More testing will be done to find the best surfactant in terms of sensitivity, and to learn what organ the material attacks. Then Gruber will tailor some chemical molecules so he can determine the least amount of material that will be effective.

He says, "There's no question in my mind that it stops sharks. We just need to find out which surfactant to use and how much works best."

## Sturgeon Sting

VANCOUVER — Three anglers from the Columbia River region between Washington and Oregon were arrested Sept. 15, 1987 for the unlawful sale of sport-caught sturgeon.

More arrests may follow, according to fisheries patrol agents from both states. They say as many as 26 other people may be involved.

In June, the agents began posing as sport fishermen below the Columbia's Bonneville Dam after other anglers in the area reported the illegal sales. The suspects arrested so far allegedly sold or set up sales of sturgeon to individuals for private consumption.

"We are following other leads that may take us to one supermarket," says fisheries patrol officer Brad Young. "This case is a large one in the fact that there are many individuals involved, yet it wasn't any organized activity. They were acting independently." The suspects allegedly sold the fish at much lower prices than those commanded by legal, commercially caught sturgeon. Current law restricts the use of fish caught during sport seasons to personal consumption.

### Sharp Drop in Antarctica's Ozone worries scientists

Scientists are keeping a wary eye on an unexplained and steadily worsening drop in the ozone level over Antarctica. For one month every year, the protective ozone layer which screens out damaging ultraviolet radiation from the sun, decreases as much as 60 percent over an area as large as the United States. Totally unpredicted by sophisticated forecasting techniques, the ozone 'hole' has been getting steadily larger and more serious since it was detected in the mid-seventies. Theories about its causes range from periodic changes in the sun's ultraviolet radiation emissions, which can affect production of new ozone in the atmosphere, to release of chemicals from the oceans in the southern hemisphere. Most worrisome is the possibility that the drop signals unexpectedly rapid destruction of the Earth's entire ozone layer because of increasing worldwide use of chlorofluorocarbons.



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## Economic Value Concepts and Salmon Allocation

by Hans D. Radtke, Ph.D.  
Agricultural and  
Resource Economist

The following is an explanation of economic concepts and terms commonly used in economic analyses of natural resources such as salmon. It is important to understand these concepts so as not to misuse results from a specific analysis to cover broader policy questions.

### Meaning of Value

More often than not, when economists are asked about the value of salmon there is a presumption that an all-encompassing "one number" measure of value can be developed and even applied across the board on a per fish basis. The usual question that people want answered is, "What is the value of (a) salmon to Oregon's economy?" Unfortunately, there is no correct way to provide a single, simplistic answer to this question.

In the analysis of policy alternatives we are interested in the value of products and activities which increase or decline due to our choice among the alternatives may not be particularly helpful to try to value the salmon themselves. That value varies over time, from area to area and by use.

Value estimates are most helpful to decision-makers when (a) the specific measure of value estimated is clearly defined and understood, (b) the value estimates for all alternatives are expressed in comparable units and (c) potential gains are expressed in terms comparable to potential losses. Furthermore, it is not the total value of affected activities which is of interest, but the change in value resulting from a choice among policy alternatives. The most important questions in valuing alternatives are: Who is involved? What are the objectives? What activities are being changed? What is the causal chain from action chosen to objectives affected? What scales are to be used to measure benefits (gains) and costs (losses)? How can value information be estimated? What assessment is warranted from the information collected?

**Valuation and Salmon Allocation**  
There are no measures of value per commercially-caught salmon or sport-caught salmon which imply that allocation decisions should be biased in one particular direction under all circumstances. A common mistake is to cite alleged measures of the gross values of salmon as a justification for a particular allocation. Thus, for the recreational fishery, value is often associated with total receipts at one or more market levels. For the recreational fishery, value is often equated with angler's expenditures (costs) made on recreational fishing activities.

Although there are several types of values that may be used in an analysis of alternatives, two types of economic value measures are commonly applied to changes in activity levels associated with allocation alternatives. The first measure, which is appropriate for benefit-cost analysis, is net economic value. Roughly speaking, the difference between the gross value of an economic activity and the costs (properly defined and measured) of carrying out that activity is called net economic value. The second measure is the impact on community income. By income we mean the income people receive in the form of wages, salaries and proprietary income (profits).

I mention the above concepts because they are frequently misused by non-economists or poorly trained economists. The net value concept is used as a means to analyze public investments such as hydroelectric dams, water conservation, fish enhancement projects, etc. Net economic value concepts can be

used without too much misrepresentation on small defined projects when a response to a certain project can be defined, e.g. as a result of a dam, electrical production can be increased (increased value) but fish production decreases (decreased value). These values are mostly missed in the aggregate.

I am not aware of any credible economic study that would allocate all salmon on the Columbia River to one user group over another. The concepts of net value should only be used on a "marginal basis."

The other economic concept is that of economic impact. This can be used to answer questions such as: What amount of personal income is created in a community as a result of a certain activity?

I am enclosing for your information two papers prepared for the Oregon Department of Fish & Wildlife: "Coastal Community Impacts of the Recreational/Commercial Allocation of Salmon in the Ocean Fisheries" and "Selected Economic Aspects of the Commercial/Recreational Allocation of Willamette River Spring Chinook." Both these papers suggest key considerations in any policy changes. For the first paper, these are:

"One of the most important things to understand concerns comparison of the estimates presented for commercial fishing to those for recreational fishing. The commercial estimates are for income impacts per fish. The recreational impacts are for income impacts per recreational fishing day.

Historical data suggests that each recreational fish "supports", on the average, roughly one day of commercial fishing. It is tempting to conclude that each additional recreational fish would produce a community income impact of at least \$36. Further, it is tempting to compare the \$36 figure to the \$16-18 income impact figures for a commercially harvested and processed coho. It would appear that an unambiguous case for reallocation from commercial to sport has been made. This could be an incorrect inference.

Suppose a large "block" of coho is reallocated from the commercial to the recreational fishery at the same time the daily bag limit is increased to six fish. As a result of the increased bag limit, suppose the average catch per day increases to three (3) coho. In effect, the income impact per average recreational coho is reduced to \$36/day divided by 3 fish/day or \$12 per sport caught fish, because fewer recreational days were "supported" per sport allocated fish. The \$12 impact is not greater than the \$16-18 per commercial coho impact. This reallocation scheme does not clearly produce coastal community income.

This hypothetical example has some implications for the magnitude of reallocation and the structure of recreational regulations which may accompany it. Simply put, the community income impacts of reallocation depend on the effect on angler effort and tourism induced as a result of the reallocation. It is the additional effort and resulting expenditure in the coastal communities which can produce positive and significant impacts. Several policy variables can influence the results:

- 1.) Total number of fish allocated to the recreational fishery. (Does the number exceed the amount which can be utilized under reasonable bag limits and season lengths?)
- 2.) Daily and weekly bag limits. (Will a one fish daily bag limit stimulate effort? Will a large bag limit "burn up" the total sport allocation without a proportional increase in angler use and tourism?)
- 3.) Timing of seasons. (When are the fish available to various geographical areas? Will the

capacity of tourist facilities and publicly provided services — the local infrastructure — at a particular port be sufficient to support additional tourist fishermen? In July? In May or September?

Good specific choices among alternatives for each policy variable could lead to longer recreational seasons, and give both the potential recreational "customer" and the supporting industry stability and the ability to play ahead. These choices should also be made with some understanding of the likely reductions in commercial-recreational income. In this way a "balanced" set of regulations might increase overall community income and, at the same time, not impose undue hardships (losses of income) on the commercial sectors and dependent community. While any change in allocation will impact specific businesses, it is important that the general community economies can be affected by those changes."

For the second paper, the key points were:

"Based on the impact models and all other assumptions made to compare the commercial and recreational impact estimates, the loss in personal income in communities around the gillnet fishery is greater than the gain in personal income to communities around the recreational fisheries. Thus, if we use the criteria of community personal income impact, we would not advise closure of the winter gillnet fishery."

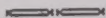
"Both fisheries are premier fisheries in terms of overall contribution to the people in surrounding communities. Eliminating the net fishery would cause a significant loss of personal income compared to the potential gain elsewhere. Loss of the net fishery might also affect the structure of the commercial industry and could affect decisions on location of permanent residence by those Oregon gillnetters who brought back an estimated eight million dollars in net income from the Alaskan net fisheries in 1985.

"On the other hand, it is difficult to recommend a reallocation from the sport fishery to the net fishery. The sport fishery is a premier fishery which greatly enhances quality of life in the metropolitan area. Further, huge investments in equipment, moorage and recreational support business could be affected. The recreational impact estimates include only trip impacts and do not adequately capture the impacts of a potential change in the structure of the recreational fishery and support businesses."

In any comparisons of economic impacts of resources, several main points have to be considered. These are:

- 1.) What is the total amount of personal income generated by the economic activity in question?
  - 2.) What is the change in economic activity and therefore personal income derived from that activity that results from suggested changes?
  - 3.) For the community in question, is this an activity that generates personal income that would otherwise not be generated?
- General conclusions drawn from studies that investigate narrow, specific questions should be weighed carefully and with some skepticism.

Economics, if used correctly, is only a tool to help understand relationships between uses; it should not be used as the only criteria in making policy decisions.



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## Some thoughts on Columbia River Gillnetting

by Bill Sibbett, Trinity River

A few years ago I wrote in the PSGA newsletter that the new U.S./Canada Pacific Salmon Treaty for Puget Sound fishermen was a very costly trade of Fraser River sockeye for "paper" Columbia River fish; fish that I never believed in a million years would come back with all the dams, pollution, and other environmental degradation. I still believe it was, and always will be, both an unfair and costly trade. However I may be, and even now I will be wrong on my second point of the "paper" fish not returning. The last two years, as we all know, have seen impressive runs on the Columbia. Next year is forecast to be good as well. The downside of the good Columbia runs is that they are the Finnock and coho which are split among more users than the Fraser River sockeye. With the loss of the troll and the increasingly insatiable demands of the recreational anglers.

Because of the larger runs on the river, much interest has been generated among the Puget Sound fishermen. Consequently permit prices have skyrocketed from \$3000 two years ago to around \$20,000. For the first time in many years, old time Columbia River fishermen are building new boats.

Now for my thoughts and opinions. These are personal observations and do not represent any policy, decision or action on the part of the PSIGA Board of Directors.

When Columbia River guys, or any new fishermen come to Puget Sound to fish "our" waters, we expect them to learn both the written and unwritten rules of conduct. We teach them by word and example, both politely and rudely. If they learn quickly and choose to abide by the unwritten rules, they will have a nice time and catch some fish. If they don't learn through stubbornness, then fishing will always be a struggle, no fun and probably be unproductive.

So it is too on the Columbia. If you go to fish the Columbia, or any new area or fishery, I strongly encourage all fishermen to learn the rules, especially the unwritten ones.

Many of us have heard of "Drift Rights" on the Columbia River. This practice dating back to the 1800's involves groups of fishermen called Drift Unions or Drift Associations getting together and clearing the snags from the bottom of the river so you don't destroy all your gear instantly. This past season I began with 250 fathoms of gear. By the end of a good season I had only 40 fathoms of that original net left. A good good friend of mine on "Drift Rights" never broke a line.

The people on these Drift spend days and weeks and thousands of dollars clearing snags. In 1987, a judge in Wahkiakum County rules that there was not a legislative basis (law) that ever legally established the concept of Drift Rights. Consequently a few Columbia River fishermen and quite a few Puget Sound fishermen fished on cleared Drifts, both intentionally and unintentionally. Unfortunately none of these Drifts are marked on either the charts or along the banks.

Here are a few of the "rules" and a few pieces of advice.

- 1) There are no Drift Rights in Zone 1 below Tongue Point, which includes the entire Astoria area out to the Bar.
- 2) Drift Rights are only valid on the ebb tide, though don't expect the welcome wagon on the flood tide either.
- 3) Drift Rights are not supposed to occur in the ship channel.
- 4) There are many old abandoned Drifts that would love to be cleared, particularly from below Longview all the way to Bonneville Dam. The Columbia River Fishermen's Protective Union, an excellent group (active \$150) has some charts of the old drifts and currently active drifts.
- 5) If you are going to fish the river, or any new area, try to talk to some local fishermen to find out the "unwritten rules", location of Drift Rights, open water, etc. It's important for the fishermen you ask to give reasonably good information; if he doesn't then you can't possibly be expected to know where not to fish. Likewise if somebody asks you for information, then it's in your best interest to give them good information. I have usually found that if you give another fisherman good information, they are much less likely to cork you than they would give them a hard steer.

There is no question but that ANY water on the Columbia River is public water and a public resource; therefore any fisherman may be able to fish that water according to the recent court ruling. The Common Law status of Drift Rights has yet to be tested in court and probably will be soon to see if a hundred years of a practice legally validates it. For the sake of a peaceful and orderly fishery on the Columbia; for the sake of maintaining the fishing "flow" of the river, I strongly, strongly encourage all fishermen who fish the Columbia to respect Drift Rights. If new fishermen ignore Drift Rights everybody stands to lose since Drift Associations will no longer clear drifts and then everybody will tear up lots of gear.

The greatest order and productivity in all fisheries often arises from the unwritten rules, the rules by which fishermen govern themselves and ultimately the destiny of those fisheries.

## Drifts and Tow Heads — 1876

Upper Astoria,  
Clatsop County, Oregon  
April 24, 1876

At a special meeting of the Columbia River Fishermen's Beneficial Aid Society, the following regulations for the government of all concerned were adopted. That the following drifts and Tow Heads be established for the fishing season of 1876.

First Drift from Woody Island to Browns Point.

Second Drift from Browns Point inside of Snag Island to the 12th red buoy.

Third Drift from the 15th Buoy to Tongue Point.

Fourth Drift from Tongue Point to a point a little west of Booths Cannery at a place to be designated by a spile or some permanent mark.

Fifth Drift from the termination of the fourth drift to Smiths point.

Sixth Drift from Smiths Point to the Pacific Ocean.

Seventh Drift from the red in the Prairie Channel to Tongue Point up or down.

Eighth Drift the big snag in Chinook Shoal will be considered a Tow Head.

The Fishermen in Astoria in council have mutually agreed to bind themselves to be governed by the foregoing drifts and it is expected from boats outside of the Society that they will also conform to the same.

By Order of the Society,  
Thomas Dealtry, Secretary

## Aquaculture Jobs For Fishermen?

Fishermen are often told that aquaculture will present more opportunities for employment than it eliminates. That has not exactly been the case in Norway, despite weeks of debate in the Norwegian Legislature over the impact of salmon aquaculture on salmon gillnetters and the numerous regulations designed to protect fishermen's income. Fishermen are losing ground because aquaculture has wooed away their greatest ally—the consumer. In Norway, shoppers no longer need commercial fishermen.

Beginning in 1968, salmon gillnetting will be prohibited in Norway. According to the Norwegian Fishermen's Union, this move will affect 500 to 1,000 full-time, small boat fishermen who depended on salmon for a third to a half of their total income. The rest of the year, these fishermen use their 30'-65' vessels to catch other inshore species like cod and herring. Some salmon traps will continue to operate under the 1985 change in law that banned gillnets.

Norwegian consumers showed little interest in the debate over the ban as they will be able to buy salmon whether fishermen set their nets or not. "Some specialists and gourmets prefer wild salmon, but they were not out in the field fighting" for the fishermen, says Torlie Paske of the Noregs Fisking or Fishermen's Union.

The ban was ostensibly passed for conservation reasons. Sport fishermen have also taken their cuts and are allowed only a very reduced season. But as commercial fishermen point out, they no longer have a season at all. The sports lobby is very powerful in Norway. It's also very rich. Norwegians are able to "own rivers" or rather the banks on both sides of a salmon stream and so charge high prices for the right to fish there.

Paske says that the government has not yet established programs to help gillnetters find other sources of income. "There has been some talk of salmon farming, but no one has gone into it yet," he says. And, he adds, salmon farming may not be the answer anyway.

Many of Norway's original

Ma-and-Pa salmon farms were established by salmon gillnetters who retired their nets under government programs. But these folks are beginning to sell out to companies and individuals with experience in business and marketing, says Paske. The need for "capital and competence" has grown so much as the industry expands that these former fishermen are finding themselves in over their heads.

Some aquaculturists welcome the ban on gillnetting. "I think that will be helpful to the development of sea ranching," says Norwegian biologist Ingvar Huse. "That's impossible now because of the gillnet fishermen."

Interestingly enough, the fishermen's unions also see op-

portunities for their members in ocean ranching, especially that of whitefish, and are following experiments in cod and halibut production with great interest. If marine fry are deposited in a fjord to mature, the knowledge of traditional fishermen will be needed to recapture those fish when they reach market size, Huse says.

—Kris Freeman

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## The Iowa

At early morning she sailed for sea,  
The sea and to her fate  
Bound for San Francisco  
She was to cross the Golden Gate;  
But her mightier hand took the wheel that night  
As the dawn became bleak and thick,  
For the ran ashore, to sail no more,  
On the edge of Peacock spit  
A gale was howling while she struck,  
The sea was a raging hell  
That slashed the Iowa's bow and stern,  
And left it a battered shell.  
It took the lives her valiant crew—  
Not a man left to tell the tale;  
As the Iowa sank to a watery grave,  
To the tune of a howling gale!  
We cannot conceive the horrors  
and pain

Her men must have suffered  
that morn.  
We cannot imagine the struggle  
they fought;  
As they faced the howling storm,  
For the sea is good and the sea is bad;  
We cannot control its whims;  
We can only trust to the Almighty God  
To forgive us for our sins.  
So we say goodbye to the ship  
and crew,  
The Iowa that will sail no  
different sort,  
And have found a paradise  
shore.  
A memory lives of that cold  
gray dawn;  
A memory of the sea and her  
tricks,  
Where a symbol lies, of a mast  
standing high  
On the sands of Peacock spit  
—HAROLD L. PHISTER





### Scientists suspect rain, not fishermen, depleted bay's bass

By Bruce Slutz

The number of healthy commercial fisheries in Maryland's Chesapeake Bay is down to a precious few. The shad and perch are gone, the alewife and blueback are nearly gone and, this year, a moratorium was placed on striped bass. Now, scientists in both Maryland and Virginia are testing the theory that a major cause of these declines has been acid rain.

If their studies find that to be the case, and many appear to believe it is, then surely the Chesapeake Bay commercial fisherman will no longer bear the onus for the decline of its own fisheries.

"We should know by the end of these studies," says Harley Spier of the Maryland Department of Natural Resources (DNR). Maryland, with grants from the federal Emergency Striped Bass Study, is undertaking work this spring in the Choptank and Nantuxet rivers and in the Chesapeake and Delaware Canal, all major spawning grounds for Chesapeake striped bass. A study in the fresher headwaters will examine waters where herring and white perch spawn.

**Mortality of Larvae**  
DNR researchers expect to verify scattered findings of fish larvae mortality during the past few years. It seems that striped bass and other anadromous species have been making it to the spawning grounds and releasing eggs, but apparently the larvae that hatch are killed off sometime during the first two weeks of May. At that time, the waters of the spawning grounds are highly acidic.

Acidity is measured by pH. A pH of 7.0 is considered neutral. Anything less than 7.0 is considered acidic. Striped bass, says Spier, are known to be highly sensitive to pH. A pH of 6.5 is generally the lowest the fish can tolerate. Levels in the Nantuxet have been found to fall to 6.3 and below. Levels in the Choptank have fallen to 6.9.

"Sports Illustrated" was catalyst. Under such acidic circumstances, explains Spier, aluminum and other dissolved metals that are toxic to fish are more readily mobilized. Larvae exposed to high levels of toxic metals cannot survive. "Since 1980, we have been able to correlate the disappearance of the larvae with the rainfall," says Spier.

What prompted the sudden action on the acid rain theory was an article in "Sports Illustrated" magazine by Robert H. Boyle, a senior writer of the magazine and author of "The Hudson River." In his spring 1984 piece, Boyle suggested that all the proposed regulatory actions on striped bass would have little long-term effect if the cause of the decline were not overfishing but, as the evidence he collected showed,

acid rain.

While the \$5-million Chafee committee study on the striped bass concluded there was no smoking gun to be found, no single cause for the decline of the bass, Boyle said the researchers had ignored the available data on acidity's effects on stripers and other species.

With the decline of the Chesapeake stock, Hudson River stripers are forming a larger and larger percentage of the entire East Coast stock. The researchers said the reason for the health of that stock is the lack of fishing pressure in the Hudson, where harvesting striped bass has been banned since 1976 due to PCB contamination.

Boyle, however, pointed to the exceedingly healthy stock of Hudson River shad. This species has been fished continuously and heavily by commercial netters along the river.

"The most obvious explanation," wrote Boyle, "is that the spawning grounds for striped bass, shad and other fish in the Hudson are highly buffered by its extensive limestone beds. In 1983 the low pH was 7.5 and the high was 7.8, whereas rivers and streams in the Chesapeake are subject to acid pulses." The shad in the Chesapeake are at dismal low levels, and fishing for them was banned in 1980.

**Some Answers Needed**

"Some pointed questions have been raised, and they deserve answers," says John Olney of the Virginia Institute of Marine Science (VIMS). Researchers from VIMS will be out this spring on the Pamunkey River, a tributary of the York River and a spawning ground for striped bass.

"In Virginia, we have no evidence that acid deposition is affecting the striped bass, but because the evidence is not available doesn't mean it's not happening," said Olney.

If it is happening, finding a solution will require some national attention. A main culprit in producing acid rain is power plants.

"I can count the ones along the Chesapeake on my fingers," says Spier. Studies show that the emissions from power plants combine with the moisture in the atmosphere to create sulphuric acid. The major sources of these emissions are plants in the Midwest.

New York and New England states have recently sued the federal government for failing to take action on reducing those emissions. Many lakes in the affected states have become highly acidic, and many simply have no fish life at all.

Though Spier is hopeful that scientists may at last be approaching a solution to the decline of the bass, the moratorium on fishing will surely remain in effect. With present stocks of striped bass at such low levels, the moratorium may well make all the difference between the next year class and extinction for the fish of Chesapeake Bay.

### Quick-Broiled Sole Fillets

This recipe also works well with flounder, small fillets of fluke, porgy, red snapper and sand dabs.

- 1 tablespoon unsalted butter, melted
- 1 tablespoon olive oil
- 1 teaspoon paprika
- 1 tablespoon fresh lemon juice
- 1 tablespoon vegetable oil
- 4 sole fillets (up to 6 ounces each)
- Salt and freshly ground black pepper as desired
- $\frac{1}{2}$  cup fresh bread crumbs

**Lemon wedges**

1. Preheat broiler.
2. In small mixing bowl, blend butter, olive oil, paprika and lemon juice.

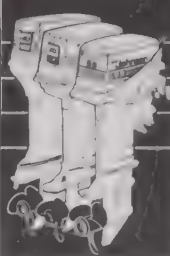
Select a baking pan just large enough to hold fish. Oil bottom of pan with vegetable oil. Arrange fillets, skin side down, in pan. Sprinkle with seasonings and brush lightly with butter-oil mixture. Sprinkle bread crumbs evenly over fillets.

4. Place pan four to six inches from heat source. Broil until fish is golden brown, five to 10 minutes depending on thickness of fillets. If bread crumbs start to become too dark, reduce heat or lower pan.

5. When done, serve immediately with lemon wedges. Makes four servings.

**Microwave directions:** This recipe does not lend itself to microwave.

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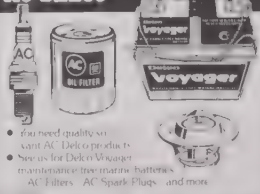
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## Despite challenges, the Boldt decision is probably here to stay

Infamy, like celebrity, obscures those who possess it. George Boldt had both. By the time of his death last spring, the retired federal judge was a household name in the Northwest. He was the man who "gave half the fish to the Indians," the author of the Boldt decision.

Few people today understand the reasoning behind the influential 1974 ruling. Fewer yet understood the man himself, who was described by colleagues as frail, scholarly and legally conservative. He finished life as a sort of exile, reviled by many angry whites and revered by the Northwest's Indian tribes.

The latest and most successful of many campaigns to repeal the Boldt decision has been Washington's Initiative 456, which passed with 53% of the vote last November. The measure lacks the legal force to change the way fish are allocated, but it has the political momentum to the foes of the Boldt decision as they take their case to Congress.

The measure, which appeared on the ballot as an attempt to "decommercialize" steelhead trout and to enact state policies "respecting" Indian treaty rights and natural-resource management, asks Congress to ban Indians' treaty-protected commercial fishery for steelhead. It also sets up state policies that challenge all special Indian treaty rights and deny the federal government's authority to intervene when Indian fishing rights are violated, or in any other matter pertaining to natural resource management in the state of Washington.

Prominent among supporters of the measure are a number of anglers' groups whose salmon and steelhead seasons have recently been curbed — as commercial fishermen's were years ago — to allow Indians to take half the harvest and to assure conservation of stocks. The angry sportsmen have added fuel to the flame that disgruntled commercial fishermen have kept going since the Boldt decision cut their catch in half eleven years ago.

Yet many anglers' associations — notably Trout Unlimited — have opposed the initiative and its goals, contending that the only solution for the state's troubled salmon fishery is to cooperate with Indian tribes to reach common goals.

Most legal scholars say the initiative won't hold up under court challenge. Opponents of the Boldt decision fought the ruling all the way to the U.S. Supreme Court in 1979, arguing that the decision had made "superstitious" of Indians by giving them more fishing rights than others. The high court upheld Boldt's interpretation of the treaties.

Here are some of the major reasons why lawyers think the

Boldt decision is here to stay, culled from dozens of interviews, legal journals and federal court decisions.

### A Property Right

What the tribes possess is not a civil right but a collective property right to half the fish. That was the main thing they kept when they signed over most of western Washington to the United States in the 1850s. So, as the courts see it, the Indians' treaty right to take half the fish is no more "unequal" than the right of shareholders to receive dividends.

Congress could abrogate the treaties, but so far it has refused to do so. Few congressmen want to go down in history as having voted to renege on the bargains by which the United States secured much of the West from the Indians.

The tribes negotiated as sovereign nations, not vanquished peoples, and their willingness to do so provided the only means to obtain land for settlers without bloodshed. Most members of Washington's congressional delegation openly opposed Initiative 456 during the campaign last fall, saying it overreached the state's constitutional authority and could only breed more bitter lawsuits.

### Why Half the Fish?

The tribes retained the right to fish "in common with" the citizens of the territory. This ambiguous wording doesn't seem to reserve half the fish the way most people understand it today.

That language was apparently more clear in the time and context of the treaties. Judge Boldt turned to the 1828 and 1862 editions of Webster's American Dictionary of the English Language and found the primary definition of "common" was "belonging equally to more than one..." So, he decided, the deal was 50-50 between the two parties of the treaties.

The Supreme Court agreed in its review of the decision: "Since the days of Solomon, such a division has been accepted as fair apportionment of a common asset, and Anglo-American law has presumed that division when, as here, no other percentage is supported in the language of the agreement or the surrounding circumstances."

The high court noted that the same "in common with" language occurs in an East Coast fishing treaty between the United States and Great Britain in 1854, about the same time as the treaties interpreted by Boldt. This wording has been officially interpreted by the State Department to mean each nation can take half the fish.

### Force of Numbers

Such arguments may sway judges, but the opponents of In-

dian treaty rights are as adamant as ever. Initiative 456 was endorsed by the Washington Republican Party, by at least one state farmers' association, by dozens of sportsmen's groups and many others who have little to do with fishing.

Some who support the measure fear that Indian land and water rights claims could threaten their commerce and property. Some covet the fish Indians are taking and worry that the Native Americans are damaging fish runs by stretching their nets across spawning rivers. Others reckon it's time to stop trying to make up for past wrongs and to start treating Indians just like everyone else.

Officials in the campaign committee for the initiative have argued that the complex, interlocking set of laws and policies that uphold Indians' treaty rights and special legal status are a patronizing insult to Indians and a source of nearly endless lawsuits. But all such reasons aside, some voters approved the initiative because they were confused by the ballot title.

"I think a lot of people wouldn't have voted for it if they knew what it was," says Lorraine Loomis, fisheries manager for the Swinomish Tribe of northern Puget Sound. "We had tribal members who got calls from people after the election who told them: 'Hey, I just did you a favor — I voted for that initiative to respect Indian rights.'"

Whatever their reasons, more than 800,000 people voted for the initiative in November. Proponents of the measure feel that vote is just what they will need to win over skeptical congressmen. "Those numbers mean a lot," says Barbara Lindsay, executive director of Steelhead and Salmon Protection Action for Washington Now (S/SPAWN), which sponsored the initiative.

Such numbers are just the sort of thing that caused George Boldt in his final years to wonder bitterly at what he called "the apparent illiteracy" of many Washington citizens. He once complained in a "Seattle Times" interview: "They seem not to have read the decision or made a real effort to understand what it actually provides."

—Brad Warren  
National Fishermen's Yearbook 1985

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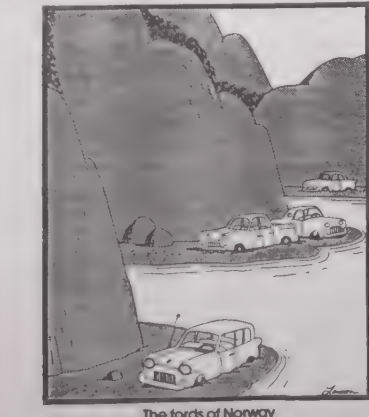
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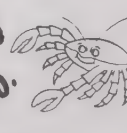
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## Allocation scheme guarantees salmon catch for Ore. anglers

Commercial trollers fishing north of Cape Falcon, Ore., will see their allocations of chinook and coho cut substantially in 1988 as a result of a January decision by the members of the Pacific Fishery Management Council. After a paper storm of letters from recreational fishing interests, a round of public meetings and heavy lobbying in the political arenas of Washington and Oregon, the council voted to accept an allocation plan supported by the sportsmen.

The non-Indian trollers, already staggering under federal, state and tribal management pressure in the division of improving but still weak runs, say they will be hurt gravely by the new allocation plan. This year, the entire fleet of about 1,500 boats will fish just eight days in May for chinook and two days in August for coho. (Indian allocations are made separately under treaties now in force between tribes and the federal and state governments.)

The plan must be approved by Secretary of Commerce C. William Verity Jr. and enacted under emergency rules since the normal council plan amendment process cannot happen quickly enough to accommodate the summer season. The emergency order will be in effect for one year only, after which the regular plan amendment process or an additional emergency rule must address the allocation issue.

The allocations will be made under a formula that increases the commercial catch if the runs are bigger, but essentially guarantees the recreational catch by giving anglers a higher percentage of lower runs. "We've been living with lower and lower allocations all our lives," said one disgruntled commercial troller. "These guys sportsmen are getting guarantees. At present times, we have to distinguish between entertainment and our livelihoods."

According to the plan, sportsmen will take 50% of the chinook catch if the total catch (sport and commercial) is up to 100,000 chinook. If the catch is more than 100,000, commercial trollers will gain fish according to a sliding scale. In past seasons, the sport catch has been about 40% of the commercial catch. Under the new plan, at expected levels of chinook catch, the recreational share will increase from roughly 55,000 to 62,000.

As for the far larger coho runs, the new formula calls for a 75%-25% split in favor of the sport fishermen until the total catch reaches 300,000 fish. At that point the commercial fleet will take 60% and the sportsmen 40%. At recent years, roughly 350,000 coho have been available, and if that number holds in 1988, the anglers' share will increase from roughly 200,000 to 245,000 fish.

### Buoy 10 Debate

The coho taken by sportsmen in an area known as "Buoy 10" at the mouth of the Columbia River will not be deducted from the catch by sport fishermen elsewhere in the ocean fishery. This was a major bone of contention during the months-long debate on the north-Cape-Falcon allocations.

Buoy 10 is three miles offshore and marks the official beginning of the river Columbia fisheries, which are managed separately from the ocean fisheries. During a few days in late August, thousands of sport boats converge on Buoy 10 because the mass of coho milling there for the Columbia spawning run is enormous. About 50,000 fish were taken by sportsmen at Buoy 10 in 1987.

Last fall, commercial trollers threatened to sue if the Buoy 10 catch was not counted in the recreational ocean allocation. The court instructed the parties

to reach a settlement under the auspices of the council and other public forums following a period of open public commentary and suggestion. Several public hearings have been held in the past three months. A special committee of trollers and recreational fishermen prepared the options for the council based on these meetings.

Shortened recreational seasons and area closures have generated considerable public interest and animosity in Washington and Oregon. Last year, unsuccessful bills were introduced in both state legislatures which would have given sportsmen legal priority over commercial fleets in allocation matters. The effect of the council decision is viewed by many as less disruptive than a blanket legislative edict, but nonetheless a clear message to the commercial trollers.

"These allocation changes go a long way toward assuring recreational opportunity even during times when either coho or chinook are not widely available," said council member Joe Blum. Blum, the director of the Washington Department of Fisheries, supported the new allocation plan.

Phil Anderson, president of the Washington Charter Boat Association and a council member, hailed the allocation as "an important first step" to boost the recreational share of the coastal salmon catch. Before the council debate, Anderson declared support for the record that he owns a charter boat out of Westport, Wash., and that, "one way or the other, any council action will affect my business."

Dave Danabon, the first-ever commercial troller on the council since his appointment two years ago, voted against the plan. He called for maintenance of the status quo until a more thorough analysis of the situation could be made, saying he was uncomfortable voting on the north-Cape-Falcon allocation "because I'm so far from home." (Danabon is from California.) "I'm a troller and a businessman and I am sympathetic to the recreational interests, but I'm going to oppose the motion."

The voting members of the Pacific council are Anderson, Danabon, Blum; chairman Bob Fletcher, deputy director of California's Department of Fish and Game; Jerry Conley, director of Idaho's Department of Fish and Game; Joe Easley of the Otter Trawl Commission (Oregon); Randy Fisher, director of Oregon's Department of Fish and Wildlife; Charles Fullerton, National Marine Fisheries Service (NMFS) southwest regional director (votes only on certain issues); Allan Tully, a private citizen from Oregon; Roland Schmitt, NMFS northwest regional director; Richard Schwartz, a private citizen from Idaho; Jerry Thomas, a seafood processor from Eureka, Calif.; Roger Thomas, a private citizen from California; and William Yallup, a private citizen from Washington.

### Not Enough Fish

Several council members prefaced their remarks in support of or opposition to the allocation plan with a statement about the unpleasant nature of dividing too few fish among too many people. Most echoed the sentiment of Dick Hubbard, a California sport fisherman and the chairman of the council's Salmon Advisory Panel. "What we're facing here is a situation in which there are not enough fish to meet the needs of all parties," Hubbard told the council in testimony on his committee's work. "Negotiation on how to share poverty is never an easy task."

"The problem is getting a larger number of fish," said Chuck Hale of the Washington Trollers' Association. "I feel that

being asked to divert our energy into this (allocation) dispute is keeping us from the basic problem, which is getting more fish in the ocean."

Another troller said he felt he'd been sold a bill of goods when the Magnuson Act centralized authority in the council. "When the Magnuson Act came in (1977), I was optimistic," troller Donald Cowser told the council. "At that time I was doing pretty good and so were the sport fishermen. A lot of good things have come from the Magnuson Act, but it hasn't helped my troll fishery. When the act passed, I was getting six months of fishing, last year, when you figure in the bad weather, I got five days. Things don't add up north of Cape Falcon."

Several others pointed out in testimony that the commercial fishermen, who were the ones who supported the passage of the Magnuson Act, are now the people who are being destroyed by it.

The issue of equity between sport and commercial factions based on economic value was addressed in much of the public testimony and council debate on the allocation. "I don't know how anyone can say there is a fairness issue here," said council member Allan Kelly who voted for the new plan.

"The troll fishery is heavily subsidized with public funds," he argued. "The personal use (recreational) fishery pays its own way. I would say that if there is a good study of the economics of the troll fishery and the sport fishery, the trollers should find out where they stand. I've heard the 'putting fish on the table' argument (favoring commercial fishing) for 100 years and it won't hold water."


One council member voted against the allocation favoring sportsmen because of the letter-writing campaign and sport trade press editorials alleging unfairness on the part of the council. "The first time I went chinook fishing was with my dad (on a river in Idaho)," said council member Dick Schwarz. "There were so many who could pitchfork them. That was before the Bonneville dam. That's what we're facing here."

"I'm going to vote against it as a protest," Schwarz said later. "I don't like the perception of the sports interests that there is unfairness here. As a sportsman myself I should have sympathy for the north-Cape-Falcon sportsmen, but I don't because of their nasty attitudes."

Of the 128 letters received by the council, 98 supported the recreational option. 14 wanted more fish for the recreational sportsmen, and the rest supported the status quo or more fish for commercial trollers. The recreational interests also mobilized a substantial press campaign, a trade and general interest publications.

The sport position, though frequently couched in terms of economic return to the community, eventually boiled down to political clout. The council vote was 7 to 5. And as the following letter says, the trollers' ordeal is probably not over;

"Gentlemen," wrote August Cornelius, a sport fisherman from the Columbia River city of Vancouver, to the council. "I think you are being unfair to the thousands of sportsmen in Washington and Oregon. There are a lot more sportfishermen and they spend a lot of money on boats, tackle, motels, etc. You say the trollers make their living fishing, that it is unfair to take that away from them. Times change and things must change. Get out the ivory sticks out of business and sad as it may be, trollers must give way to the hordes of our citizens who want to fish for recreation. Think seriously about this fact."




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## Columbia River Green Sturgeon Facts

### Description of Species

- Green sturgeon range from Southern California north along the North American coast to the Aleutian Islands, and from the Amur River south along the Asian coast to Taiwan
- Green sturgeon inhabit marine and brackish water, and are found primarily in the lower 40 miles of the Columbia River

### Regulations and Fisheries

- Maximum size limit of 6 feet for all fisheries
- Minimum size limit of 4 feet for commercial fisheries
- Minimum size limit of 3 feet for sport fisheries
- Minor sport catch of 4-500 annually
- Less economically important than white sturgeon; incidental commercial catch of 1-3,000 annually, except 1986 was record high
- Commercial average round weight of 25-33 lbs, command \$ 40-50/lb.

### Biological Factors

- Smaller than white sturgeon
- Reach maximum length of 7 feet
- Little known regarding spawning, but managers suspect similar to white sturgeon in that
- Females mature sexually at a late age, and at length near 5-6 feet
- Green sturgeon enter freshwater in late summer-early fall and winter over to spawn the following spring

### Current Studies

- Age structure information is currently being collected and analyzed.
- Lower Columbia sport fishery sampled and catch estimated since 1982
- Commercial fishery catches known for all years, and catches intensely sampled since 1983
- Green sturgeon tagging has occurred incidental to white sturgeon tagging since 1965 with substantial increase in numbers tagged since 1985

See Columbia River White Sturgeon Facts. ODFW. 10/28/87.

WDF, Columbia River Management  
December 2, 1987

## Columbia River White Sturgeon Facts

### Description of Species

- Sturgeon originated 200 million years ago.
- 23 species in Northern Hemisphere, 7 species in North America, 2 species (white and green) in Columbia River
- Green sturgeon inhabit brackish water and are found primarily in the lower 40 miles of Columbia. White sturgeon range from Monterey, CA, north to Bristol Bay, AK and are found throughout Columbia and Snake systems
- Populations in the upper drainage of Columbia and in the Snake above Lower Granite Dam are considered remnant

### Historical Regulations and Fisheries

- Commercial white sturgeon fishery in Columbia began in 1888, reached a peak of 6 million pounds in 1892, and species was decimated by 1899
- Oregon first adopted protective sturgeon regulations in 1899; 4 feet minimum, March 1-November 1 closure, and prohibition of snag lines

- Fish Commission of Oregon conducted research project on sturgeon 1947-early 1950's
- Maximum size limit of 6 feet enacted for all fisheries in 1950
- Minimum size limit increased to 3 feet for sport fisheries in 1958
- Sturgeon stocks rebounded in 1970's (about 20 years after maximum size limit enacted)
- 1986 and 1987 catches modern record highs
- Commercial white sturgeon average 30-35/lb. round weight and command \$1.50-2.00/lb.

### Biological Factors

- Sturgeon mature sexually at 4 feet for males and 5½ to 6 feet for females
- As females become older and larger they produce more eggs and may spawn at increasing time intervals.
- Spawning occurs at water temperature of 48-62°F, primarily in May and June in rocky, fast-flowing areas
- Eggs are sticky and adhere to any surface.
- Hatching occurs in about one week.
- Average ages by length are: 7-9 inches (1 yr), 3 feet (9 yrs), 4 feet (12 yrs), 5 feet (16 yrs), and 6 feet (20 yrs).
- Sturgeon are susceptible to harvest for an average of 11 years.

### Current Studies

- Lower Columbia sport fishery sampled and catch and effort estimated since 1989
- Middle Columbia (Zone 6) sport fishery sampled and catch and effort estimated intermittently 1981 to present.
- Commercial fishery catches known for all years and catches intensely sampled since 1980
- Lower Columbia sturgeon tagging has occurred since 1965 with increase in tagging to provide population estimates beginning 1983.
- 5-year BPA-funded study began in Zone 6 in 1986.

ODFW, Columbia River Management  
October 28, 1987

### THE TRUE DOLPHIN Knows For Speed And Fighting Spirit

Two marine species in the waters of the Gulf of Mexico have the same name—dolphin. One is the bottle-nosed mammal sometimes called porpoise. The other is the true dolphin, a beautiful and spectacular game fish.

The dolphin, or dorade, is resplendently colored with hues of lilac, sea greens and emerald pastels mingled with purplish golds. Leaping high into the air when snared, this fish displays those colors with each surge. These repeated leaps of 10 to 20 feet are remarkable demonstrations of the dolphin's fighting spirit.

Dolphins are most often caught by trolling slowly in rather deep waters off reefs or in bays. The young occur in shallow waters, but the mature fish usually prefer the open seas. These fish are noted for their very great speed and their streamlined body design. The average size dolphin is about 2 or 3 feet long, and they are said to prey on flying fish.

Dolphins are also famed for unusual and rapid change of color at death. Their colors may change from yellow to green to blue to violet in a matter of minutes.

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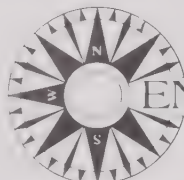
Deposits near land are so variable that no meaningful figures can be given.

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Ice floes ranging from 7 to 13 feet in thickness have been reported in the Arctic. Icebergs, which are pieces of glacial ice floating in the sea, are many times thicker than sea floes.



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## Tagging Sturgeon

In the fall of 1989, Oregon Fish Commission biologists under the direction of Dr. Alex Bajkov began studies to obtain life history information on Columbia River sturgeon. Over 7,000 sturgeon were tagged and fin samples were taken to determine age. The Washington Department of Fisheries and Oregon Department of Fish and Wildlife have, during recent years, tagged several thousand sturgeon to obtain more applicable data on a changing river system. The U.S. Fish and Wildlife Service is tagging sturgeon in pools behind Bonneville, The Dalles and John Day dams. Idaho is conducting studies on the Snake River using radio tags. Additional information derived from these programs will enhance our knowledge of sturgeon. Unfortunately, the Oregon and Washington studies are "in addition to other duties" type of projects with no full-scale funding available.

Several types of tags have been used, the most recent being a plastic tube lock-on tag which is easy to apply. Recoveries have been about ten percent of those released, with most recoveries being turned in by anglers below Bonneville. A recovery from Grays Harbor, Washington, about 150 miles away, was a modern record for travel. It was topped recently by an Oregon State University professor angling for sturgeon to tag in the Yaquina Bay estuary. He captured one of our tagged fish which had traveled 300 miles.

Fishermen are asked to return all tags from legal size fish to the address on the tag. If an illegal sized sturgeon is caught with a tag in it, the angler should leave the tag, or tags, in the fish, record the number and notify an agency. Studies have revealed the following:

1 Sturgeon migrate upstream during the fall of the year and beginning of winter.

2 They change course and begin to move downstream during the second part of winter and spring.

3 Some sturgeon do not migrate at all. However, it is often difficult to tell whether a fish has moved. It may be captured in the vicinity of tagging, but may have made several trips up and down the river.

4 These migrations are undoubtedly connected with feeding habits. Sturgeon meet the smelt and follow salmon and lamprey later in the year.

5 The above mentioned migrations are very pronounced in the 140 miles of river between Astoria and Bonneville.

6 We know that many sturgeon migrate to and from the ocean, but many never reach the ocean.

7 Bonneville Dam represents a nearly impassable barrier to migrating sturgeon. A few are

able to pass and in the past several hundred were trapped at elevators and put above Bonneville. Bonneville Dam essentially separates white sturgeon into a lower stock, and an upper one composed of several isolated populations in pools above each dam.

8 There are indications, based on several recaptures, that seasonal migrations also take place above Bonneville Dam.

Hydroelectric projects have isolated the middle Snake River sturgeon population by restricting movement into or out of the Hells Canyon area. These same projects have drastically reduced the abundance of anadromous salmonides and lampreys which diminished the food supply. In addition, power peaking may have reduced the usable habitat for aquatic insect larvae and freshwater mussels. Researchers in Idaho fitted ten sturgeon with radio transmitters before the filling of the reservoir behind Grand Dam. Nine of ten moved upstream about 20 miles where there is considerable current, showing a preference for river rather than reservoir environments. The primary habitat for sturgeon was in deep holes between rapids. Small sturgeon preferred large sandy bottomed holes in the downstream section of the river. Middle size and large fish, which were better able to swim in turbulent water, were found near rapids in the canyon.

Studies also indicated that sturgeon are reproducing successfully in part of the Snake River. Areas containing small sturgeon show that adult sturgeon continue to find areas to spawn in spite of dam construction. Small sturgeon are reported to go over spillways adding strength to the theory that these areas are helping to "seed" some of the lower reservoir pools. Most of the environmental factors and fish preferences described in the Snake River studies can be applied to lower Columbia areas.

## Norwegian cod

First there was pen-raised salmon. Now, the Norwegians are working on pen-raised cod, and reportedly, hatcheries in Norway have successfully propagated the fish artificially. This opens the door for commercial pen-raising of cod. The Norwegians reported that about 50,000 cod fingerlings will be made available to commercial users shortly.

Has a sea gull, albatross, or other sea bird ever flown across the ocean?

Some sea birds live along the coast and rarely travel far from shore. Others spend their lives over the ocean returning to land only to nest.

Sea gulls are coastal birds, so they would not normally cross the ocean. However, many oceanic birds banded in Europe have been recovered in North America. Killiwakes banded by scientists in the Barents Sea area have been recovered in Newfoundland 4 months after banding. Puffins, fulmars, and petrels also known to have crossed the Atlantic from Europe to North America, and the Arctic skua and the Atlantic cormorant fly from Northern Europe to the African coasts.

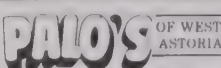
By far the most impressive travelers are the Arctic tern and the albatross. The Arctic tern, which is the size of a small sea gull, regularly migrates from its breeding grounds in the Arctic to the Antarctic. It molts in the Antarctic and returns to the Arctic to nest each year. The albatross is also an oceanic bird, returning to land only to nest. Banding records indicate that albatrosses fly around the world, especially during their first few years of life.

## Why does the sea foam?

Foam is made up of air bubbles separated from each other by a film of liquid. Bubbles coming together in fresh water coalesce, but bubbles coming together in salt water bounce off each other.

Most bubbles in the ocean are caused by wind waves, but they may also be produced by rain and even snow. The bubbles that form along the seashore are very small, mostly less than 1/2 millimeter in diameter.

When bubbles rise to the surface, they burst and release salt spray into the air, a fact well known to any wearer of glasses who has been on shipboard or at the seashore. Each bursting bubble causes a jet of several drops to rise to heights up to 1,000 times the bubble diameter. It is believed that most of the airborne salt nuclei come from bursting bubbles.



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## Change The Act! (Marine Mammal Protection Act)

THE PROBLEM...AND  
THE NEED FOR CHANGE

• The MMPA is ambiguous in its definition of critical terms, leaving legal definition to be set by courts.

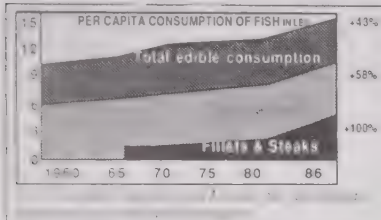
• The MMPA fully protects individual marine mammal species without concern for other interacting resources in the marine ecosystem.

• The MMPA seeks to restore all marine mammal populations to pristine levels — the highest in history — without considering the sum of their impact on today's ecosystem.

• The MMPA conflicts directly with other resource conservation acts, for example, the Fishery Conservation and Management

Act. The goal of the FCMA is conservation and development of fishery resources to provide the greatest benefit for the nation. The FCMA considers the needs of marine mammals, but the MMPA does not address resource competition: the balance of mammals, fish and fishermen.

• Current and potential MMPA restrictions hamper FCMA goals, hurt U.S. industry, threaten livelihoods, deny recreational and subsistence opportunity, and shortchange American consumers. In jeopardy is the supply of domestic fish at reasonable prices.



Alaska illustrates the magnitude of conflict. Millions of marine mammals (95 percent of the U.S. population) inhabit Alaskan waters. Alaskan seas contain perhaps the world's largest resource of fish. According to a 1976 estimate, of the 50 million metric tons of ground-fish taken in the Bering Sea, commercial fisheries removed 14 percent and marine mammals removed 20 percent. In 1987, the value of Alaska's aggregate of groundfish fisheries approached an estimated \$500 million.

The dichotomy of MMPA protection vs. FCMA productive use raises a critical question: At what level of demand for food will we decide that more marine resources be used for human needs and fewer used to support marine mammals?

Now expanding marine mammal populations cause increasing resource conflicts. Now MMPA's rigid protectionism assumes as many problems as it solves.

Sea otters caused serious declines in California's abalone fishery. Alaska's 150,000-plus otters eat close to one billion pounds of food per year, mainly shellfish. A Dungeness crab fishery in Prince William Sound was closed largely due to sea otter predation. Federal MMPA interpretation does not address

management of resource conflicts.

Guiding principles developed by scientific committee, A.M.E. recommends amending the MMPA to

- 1) Provide agencies with authority to lethally remove nuisance animals when conservation of other resources is at risk;
- 2) Provide marine mammals with the same balanced system of protection as accorded all other wildlife populations;
- 3) Authorize state and federal agencies to develop cooperative marine mammal conservation programs encompassing all interacting resources and authorizing the management of "depleted" and other mammal species in conjunction with other resources;
- 4) Authorize funding for state agencies to participate in state/federal programs, in cooperation with fisheries to monitor marine mammal populations and their interactions with other resources and human activities.

## Sea Wars

They may look harmless but sea anemones are, in fact, aggressive predators that trap and devour any minute sea creatures and small fish that pass within their reach. Their tentacles are armed with tiny organelles called nematocysts. If a passing creature touches one of these, it stimulates the nematocyst to shoot out a thread, which is usually barbed. The thread penetrates the prey and delivers a paralyzing poison. The prey is then pulled into the anemone's mouth.

Such aggressive behavior is not confined solely to the anemone's search for food, however. Many species will also attack other anemones that come too close to them. To do so, they use a ring of small, inflatable bumps located at the base of the tentacles. Scientists call these protrusions, which are also armed with nematocysts, acrorhagi.

The beaded anemones are named for the beaded appearance of the acrorhagi. They range in coastal areas throughout much of the world. Because they move so slowly, beaded anemones cannot exploit a large area of the ocean floor for food. Thus, some researchers speculate that the creatures will attack other anemones to "protect" their feeding territories.

Curiously, however, fights develop only between individuals of different genetic makeup, such as the red and white-colored anemones. After approaching and touching tentacles with the white anemone, the red one retreats. As both creatures touch again, their acrorhagi inflate on the sides closest to their enemy.

The white anemone inflates faster, though. It arches over its opponent and strikes. As it withdraws its acrorhagi, it leaves white fragments behind on its victim's body. These fragments will eventually cause the body tissue to degenerate and die around the area where the fragments penetrated.

After the confrontation, the anemones separate, with the victor holding its ground. Soon, its acrorhagi shrink back to their normal size, and the anemone resumes feeding. — Jill Bailey.

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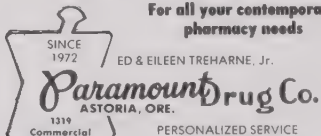
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- 1 medium-sized onion, chopped
- $\frac{1}{2}$  cup finely chopped celery
- 2 cups water
- 3 medium-sized potatoes, diced
- $\frac{1}{2}$  teaspoon salt
- $\frac{1}{2}$  teaspoon pepper
- $\frac{1}{4}$  teaspoon thyme
- 1 can ( $\frac{7}{8}$  oz or 8 oz.) salmon, drained and flaked
- 1 tall can evaporated milk
- 1 can (8 oz.) peas, drained

Saute salt pork or bacon until crisp in medium-sized saucepan. Drain and reserve bits. Saute onion and celery in remaining fat 5 minutes. Add water, potatoes, salt, pepper and thyme. Simmer, covered, 20 minutes, or until potatoes are tender. Add salmon, evaporated milk and peas. Heat slowly, but do not boil. Sprinkle with reserved pork or bacon bits. Serve with crisp crackers. Makes 4 servings.



"Herschel" at the Ballard Locks vividly illustrates a growing problem — seals and sea lions depleting spawning runs of salmon, steelhead and other important fishery stocks. Resource managers have no authority to effectively resolve these conflicts.

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**About Kelp**

Giant kelp is more involved in your life than you think. An article in Oceanus, by marine biologist Ron H. McPeak and Dale A. Glantz, gives information on how kelp gets from the ocean and into the lives of most of us. It is harvested along the California coast from San Diego north to Carmel.

In productive beds it may be cut three times a year. Modern harvesting vessels are pushed stern first through the beds. Reciprocating blades mounted at the base of a conveyor system operate like a seagiving lawn mower, cutting the floating fronds of the kelp canopy three feet below the surface. The conveyor carries the cut kelp aboard. In one day a harvesting vessel can reap as much as 550 metric tons. In California the kelp industry has harvested as much as 156,000 metric tons in one year.

The kelp forest is not damaged by this harvesting. The still-submerged part of the kelp is where sexual reproduction occurs. Also, buoyancy and photosynthesis occur the entire length of the fronds. The removal of the thick canopy lets in more sunlight, which stimulates the

growth of the new fronds that are beneath the surface. Soon a new canopy is formed, and another harvest is in the making.

When kelp comes ashore, it goes far beyond the coastline. Its products find their way into your kitchen, dining room, and bathroom medicine cabinet. They find their way into feed for livestock and poultry and into fertilizer for crops. Chemicals from kelp end up in the products of industry.

Kelp's most important contribution is algin. It was first discovered by a British pharmacist in 1883. But it was not until 1929 that Kelco, a San Diego company, became the world's first producer of algin products. Now the annual sales of these products manufactured in California exceed \$35 million. Their uses are legion. "They thicken, smooth, emulsify, stabilize, gelatinize or create a film when combined with other substances." After giving this information, Sport Diver magazine elaborates:

"Many brewers use alginates to form tougher beer bubbles, making for a longer-lasting foam head. Alginates keep cosmetic creams from separating and help maintain ice cream's smoothness. Part of the taste and texture of chocolate milk drinks and glazed doughnuts are derived

from alginates. They do everything from coating paper to improve its printing quality to making it greaseproof.

"As if those weren't enough uses, it impregnates fabrics to help retard burning. Other forms are used in laundry starches and textile print pastes. Some pharmaceuticals contain algin, as do certain adhesives, rubber products, wallboard, wallboard cements and auto polishes."

Harvesting of the giant kelp is regulated by the California State Fish and Game Commission. May the commission do its job well to safeguard kelp from human exploitation, and may the delightful sea otters protect it from the sea urchins, that the beauty of its forests may continue to dazzle our eyes and its products continue to tickle our palates.

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## Shad: since the mid-1700s

One of the oldest continuous fisheries in the nation is the American shad. Indians along the East Coast harvested the largest of the herring during the spring spawning runs of the fish long before the white men set foot on the continent. The earliest European colonists adopted their techniques. By the mid-1700s a profitable shad fishery had been developed from Maine to the Chesapeake Bay.

The spring run of shad still generates excitement among coastal fishermen from Florida to Maine. In sometimes bleak coastal communities, the shad's annual ascent of larger rivers is viewed not only as a welcome harbinger of spring but also as a restimulation to the local economy. Epicures, who savor the succulent roe, the entire fish baked to perfection, anxiously await delivery of the first caught fish.

In most regions, however, the shad is becoming increasingly difficult to obtain. Commercial landings of American shad have been in decline since the turn of the century throughout the river systems of the eastern seaboard.

Virtually the entire population of shad spends the summer and early autumn in the Gulf of Maine and Bay of Fundy. As temperatures fall, the fish migrate southward as a mass. They are believed to over-winter offshore of the Middle or South Atlantic states.

In late winter and early spring the mature fish begin to migrate inshore, homing to their respective natal rivers. Some shad swim as far south as Florida. Initial spawning runs begin in the St. Johns River as early as December. As the season advances, shad appear in rivers up the coast until midsummer in New England.

After spending a maximum of about two months in the freshwater rivers, the spent shad descend to the sea and return to their summer feeding grounds.

Shad are taken by a variety of methods, including gill nets, pound nets, haul and beach seines placed in the river. Because of the shad's tendency to migrate in huge concentrations, ocean fishing can severely impact the local and inshore fisheries discouraged. Rather, it is preferred that the fish be taken locally so the resource can be better managed.

### South Atlantic

American shad have been commercially important in Florida since the mid-1800s when water and rail routes were established, providing easy access to northern markets. Most Florida shad are still iced and shipped north in the round, as there is little local demand.

The principal fishery is centered on the St. Johns River system where shad are taken by gill nets, both set and drifted, and haul seines.

Production is declining. In 1977 the east coast of Florida yielded 57,000 pounds of shad. The highest landings recorded since 1939 were 942,000 pounds, taken in 1945.

Shad is a valuable fishery in Georgia, comprising one of the largest finfish landings in the state. The major fishery is located on the Altamaha River where fish are taken primarily with drift nets and set nets. In 1975 the dockside value of shad was \$113,000, representing more than 35 percent of the state's total landings. But, again, production is declining. From 1969 to 1978 the average annual decrease in the catch was about 37,000 pounds.

Commercial landings for shad in South Carolina peaked in 1989 at 577,000 pounds and dropped to their lowest level of only 24,000 pounds in 1974. However, landings have risen steadily from that date. In 1980, 270,000 pounds were taken, with a dockside value of \$214,000.

All major river systems in South Carolina support commercial shad fisheries. The bulk of

the fish come from the Winyah Bay system, formed by the confluence of the Waccamaw, Pee Dee and Santee rivers. Drift nets and set nets comprise the gear fished, except for a few weirs which are used in the upper Lynches River.

The shad fishery of North Carolina steadily increased from the late 1800s until the turn of the century, and at one time exceeded that of any other state. Landings reached a peak of nine million pounds in 1897, but have declined steadily since then. In recent years shad have contributed less than 1 percent of North Carolina's total finfish value.

The major harvest areas in the state are the Cape Fear River, the Chowan and Roanoke rivers, which dump into the Albemarle Sound, and the Pamlico and Neuse rivers, which flow into the Pamlico Sound.

Shad are taken in North Carolina with drift nets, anchored gill nets, pound nets and haul seines.

Frank Furlough, of Furlough & Sons Seafood, Columbia, North Carolina, described the fishery in detail as it is conducted on the south shore of the Albemarle Sound.

According to Furlough, the shad first begin to appear in early February, with the run lasting until mid-June. In May, fishermen primarily employ anchored gill nets to intercept the shad on their inshore migration. Nets are 70 to 80 inches long, of No. 69 twine, 5 1/2-inch stretched mesh. Nets are 30-35 meshes deep, designed to fish water from seven to 22 feet deep. Virtually everyone uses monofilament webbing, which makes it easier to clear the abundant menhaden and alewives. Eels and catfish will come to this bait and, Furlough says, really tangie a net.

Nets are anchored in the Sound itself. Each fisherman may work from 15 up to 30 nets. They are run at least once a day and are left out until they slime up or stop producing.

Nets are run out and fished from the bow of the fisherman's boat. Very few wood boats are in use anymore. The most popular boats now are outboard powered 16-to 18-foot River Olys. These are made of fiberglass, but are patterned after the wooden skiffs that were once abundant in this region.

### Chesapeake

In 1960 Maryland led the nation in shad production with 1.5 million pounds. Virginia followed with 1.4 million. In 1976 Maryland landings were down to 110,000 pounds; Virginia claimed 986,000 pounds. Maryland still enjoys a viable fishery, but in March, 1980 the state of Maryland closed the American shad fishery for Maryland Chesapeake Bay and tributary waters. A limited harvest still exists because there is a small allowable by-catch; fishing is still allowed in coastal waters and bays, and a harvest is still allowed in the Potomac River, which is jointly managed

by Maryland and Virginia. Total landings in 1984 were 70,367 pounds.

### Middle Atlantic

Shad landings in the states of Delaware, New Jersey and New York in 1959 totaled two million pounds. By 1977 landings for the region declined to 394,000 pounds.

Annual commercial landings in the Delaware River Basin from 1890 to 1961 ranged from 11 million to 17 million pounds and were several times greater than in any other river system. By 1957 the Delaware River shad fishery had become economically unfeasible to operate.

### New England

New England fishermen harvested two million pounds of shad in 1899. By 1927, total landings for New England were down to 359,000 pounds. Of this total, Connecticut contributed 332,000 pounds. The annual harvest in this state seems to be stabilized, with approximately 300,000 pounds of shad landed each year.

The state regulates the fishery, which is centered in the Connecticut River, from the mouth up to just below the town of Naugatuck. A season, running from April 1 to June 15, is imposed by law. And netters may not fish on weekends, which guarantees adequate escapement. Monofilament is prohibited.

Harry Root, owner of Old Lyme Seafood, situated near the mouth of the Connecticut, detailed the drift net fishery on the river. Root says he's been in the business for "30 years too long."

Nets are of No. 69 braided nylon, 5 1/2-inch stretched mesh, 20 to 30 meshes deep, and about 1,400 feet in length. Since shad are so reluctant to hit a nylon net, fishing is limited to the nighttime or during early season freshets when the water is muddied.

The net is run across the river and allowed to drift with the current. With a light on each end, the net is clearly visible to the fishermen who drifts along with it in his boat.

The advantage of drift netting is the large amount of territory which can be covered in one night's fishing. The disadvantage is in the increased amount of wear and tear on the nets. They must be replaced each year.

Root has only about a dozen fishermen who fish the year around. After the shad run, some go to lobsters. Most go back to other jobs. He figures that the best fishermen gross \$6,000 to \$10,000 during the five-week season.

Old Lyme ships roe to New York and as far away as California. Shad are boned at only four locations in Connecticut and used for the fresh filets is strictly local. Root says that in the future the fishery should remain stable in Connecticut since there are not enough fishermen to hurt it.

Processing Most dealers who handle shad report that they limit their pro-

CONTINUED ON PAGE 19

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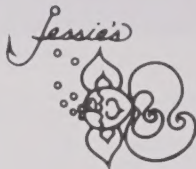
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**Shad:**

CONTINUED FROM PAGE 18

cessing to cutting out the valuable roe, which can wholesale for \$4.50 for a jumbo set. Fish are then sold whole to the consumer or are passed on to other dealers where the fish are banded.

According to Don Sulewski of the W.T. Freburger Company, Jessup, Maryland, there is more boning going on in the Baltimore Market now than ever.

The fine bones in the shad lie in four rows. It is something of an art to cut them out and is a process which takes some time to learn. A good boner can cut the roe, scale the fish, take off the head, split and bone in about two minutes and, in the Baltimore Market, earn up to \$1.50 per fish.

Sulewski says that the market for shad is not as firm as it used to be because the younger generations do not utilize the fish.

Frank Furlough of North Carolina agrees. "Eating habits have changed. People won't eat bony fish anymore." Demand for roe remains strong, however.

**Decline and future**

Anadromous species are particularly susceptible to the deleterious effects of human activity. Coastal rivers and estuaries that the fish have historically ascended in order to spawn have often proved to be ideal locations for initial settlements. The decline of the shad on the Atlantic Coast appears to parallel the increase in human population and development along these rivers.

The substantial decrease in the abundance of the American shad can be attributed to construction of dams, pollution by chemicals and sewerage, channelization, dredge and fill projects which reduce spawning habitats and overfishing.

**1987 British Columbia Salmon Catch Down**

British Columbia Chinook catches hit a 25-year low in 1987. The 1987 catch was about 700,000 fish, the worst since 1962. For 20 years, up until 1983 the average take was about one million chinook annually.

By contrast the entire Oregon coast and Washington had good returns.

Rick Berry, a staff biologist with the Oregon Fish and Wildlife Department, said from his Portland office that commercial trollers took 500,000 chinook in 1987, up from 367,000 the previous year. Gillnetters enjoyed the largest catch since the 1940s and sports anglers had good catches, especially in the Columbia River. Experts here say poor climatic conditions at sea are probably to blame for British Columbia's chinook problems.

Hatchery fish, which make up about 15 percent of British Columbia's salmon, are tagged and can be accurately tracked. With hatchery productions in British Columbia at high levels but catch returns low, biologists know the fish aren't surviving at sea. But they don't know why.

Washington biologists are still evaluating last year's chinook returns, but Terry Flint of the state Department of Fisheries said he sees no signs indicating a poor year.

Alaska comes closest to sharing British Columbia's chinook problem, having experienced returns that worry biologists to the point that catch restrictions will be brought into place this year.

"We saw record levels in the '80s but the trend in the last couple of years has been on the downside," said Richard Randall, regional supervisor for the Alaska Department of Fish and Wildlife.

He said over-fishing is to blame.

**Strong Salmon Return**

EUREKA — King salmon returned to the Eel River in northern California in such record numbers late last fall that many of the residents of the towns along its course stood on the banks to watch. It was the largest spawn in memory, according to the Pacific Coast Federation of Fishermen's Association (PCFFA), and fishermen are expected to enjoy good seasons in the near future. Near-record runs also returned to the Sacramento, Klamath-Trinity and Smith rivers.

Fishermen attribute the high returns and good ocean catches off Oregon and California to a combination of factors. Chief among these were high freshwater outflows during the winters of 1983 and 1984, the brood years for the 1987 returning stocks. "Large spring outflows of fresh water to rivers, estuaries and ocean have been found critical to salmon survival," says Nat Bingham, PCFFA president. He also points out that restoration, water management and enhancement programs contributed to the improvement.

—Brad Matsen

**Storm Claims Divers**

SAN PEDRO — Six sea urchin divers wearing full wet suits survived 17 hours in storm-driven seas Dec. 16, after the 42' San Pedro-based Explorer became swamped four miles northwest of Santa Barbara Island. Three other members of the vessel's nine-man crew, however, are missing and presumed dead.

A Navy helicopter lifted the survivors to safety after rescue crews had scoured 2,000 square miles of ocean surrounding the Channel Islands, looking for the ill-fated boat and crew. Five of the six survivors were spotted floating near the Explorer's bow, which remained above the water. The sixth was found an hour later, clinging to a surfboard. Those who didn't survive reportedly were wearing only partial wet suits.

The Explorer was returning from a dive trip at San Nicolas Island when it was disabled by the Arctic-bred southeaster. Coast Guard officials said the vessel was not equipped with a life raft.

The tempest was reportedly southern California's worst since El Nino storms battered the area four years ago, sinking boats, destroying beaches and uprooting piers.

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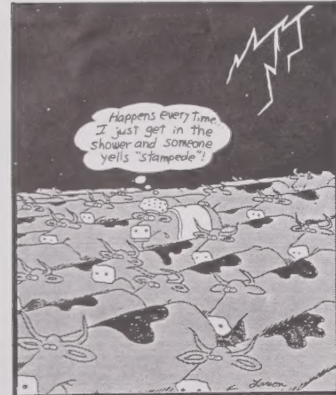
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Astoria's 1935 Fighting Fishermen State Basketball Champs. L-R - Back Row - Coach John Warren, Willard Caspell, Albert Luukinen, Mel Olson, Wally Johansen, Bob Wright - Mgr. Bill Van Dusen. Front Row - Robert Anet, Henry Nielsen, Robt Kisman, Ted Sarpola, Leland Canessa. This was the last year as coach for John Warren. He went on to coach at University of Oregon and so did many of his players. In 1939 the Oregon Tall Firs won the 1st NCAA Basketball National Championship and four Astorians were there playing on the team in Madison Square Garden the night they won 1st Place. Astoria High School won the State Championship in 1934 and was 3rd place in 1933. Many, many athletes up and down the Columbia River earn their college money through the fishing industry.

### "The Columbia River Bar"

I'm heading for the Columbia River Bar.  
I've been there many times before.  
But friend, it'll never be a bore  
One minute calm, the next its war.

I'm heading for the Columbia River Bar.  
I've been there many times before.  
If the sea could talk, we'd probably get out and walk.  
For the tales that could be told, of the  
frightened and the bold, of ships laden with gold,  
How far beneath in the cold.

I'm heading for the Columbia River Bar.  
I've been there many times before  
If the sea could talk, we'd probably get out and walk.  
For the tales that could be told, of the  
frightened and the bold, of ships laden with gold,  
How far beneath in the cold.

I'm heading for the Columbia River Bar.  
I've been there many times before.  
With the South Jetty on my stern,  
I know some day I'll return — I'll be  
heading for the Columbia River Bar.  
I've been there many times before.

Author: Jim Bernard  
Astoria, Oregon

### "ATTENTION FISHERMEN"

A project to record the commercial fishermen of the Columbia is being started by Oregon Sea Grant Extension, the Maritime Museum, and various other agencies. The goal is to record the experiences of fishermen for historical record and to use for production of video and slide presentations. The goal is to do a video tape similar to "Remembering Uniontown" and Steam "Whistle Logging."

The more people we can involve in the project the better. Everyone has a story to tell and their experiences are important to local history.

If you are interested in helping please contact Jim Bereron at the Seafood Laboratory near the East end mooring basin. Phone 325-9027.

### Fish Swimming Speeds

Two University of California (at Los Angeles) scientists, using a magnetic "speedometer" attached to a fishing rod, measured the speed of a yellowfin tuna at about 45 miles per hour. A wahoo, a mackerel-like fish, swam up to 48 miles per hour. Zoologists previously have been of the opinion that fish seldom ever swam faster than 27 m.p.h.

### Record Catch

PORTLAND (AP) — Oregon fishermen caught a record \$94 million worth of salmon, halibut, crab, shrimp and other fish in 1987, officials said, with Astoria leading the state.

Astoria was first in the value of fish landed at its docks with \$35.5 million, said Hans Radtke, a spokesman for the West Coast Fisheries Development Foundation. Newport was second with \$24 million while Coos Bay was third with \$21.5 million.

The value of the 1987 catch was nearly three times the value of the 1984 catch, which was worth about \$34 million, according to Chris Carter, Department of Fish and Wildlife staff economist.

The total weight of the 1987 catch was the second-highest on record at 138 million pounds. The record was set in 1981 at 148 million pounds of fish.

Radtke said last year's pink shrimp catch totaled 45 million pounds at an average price of 68 cents per pounds.

That compares with 34 million pounds caught in 1986, selling for an average price of 50 cents a pounds.

Trawlers harvested 67.4 million pounds of bottom fish worth an estimated \$23.6 million.

Salmon trollers and gillnetters had their best harvest in years, worth \$28.5 million for all species, beating the previous record of \$21 million in 1979. The total catch weighed in at 14.7 million pounds, the largest since 1976.

Radtke said the fishing industry provides about 1 percent of Oregon's total earned income but it accounts for about 14 percent of the coastal earned income.



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